SPECIAL
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# inbound logistics

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THE MAGAZINE FOR DEMAND-DRIVEN LOGISTICS • JANUARY 2014

# 163 WAYS TO SUPERCHARGE YOUR SUPPLY CHAIN


**January 2014** • Vol. 34 • No. 1

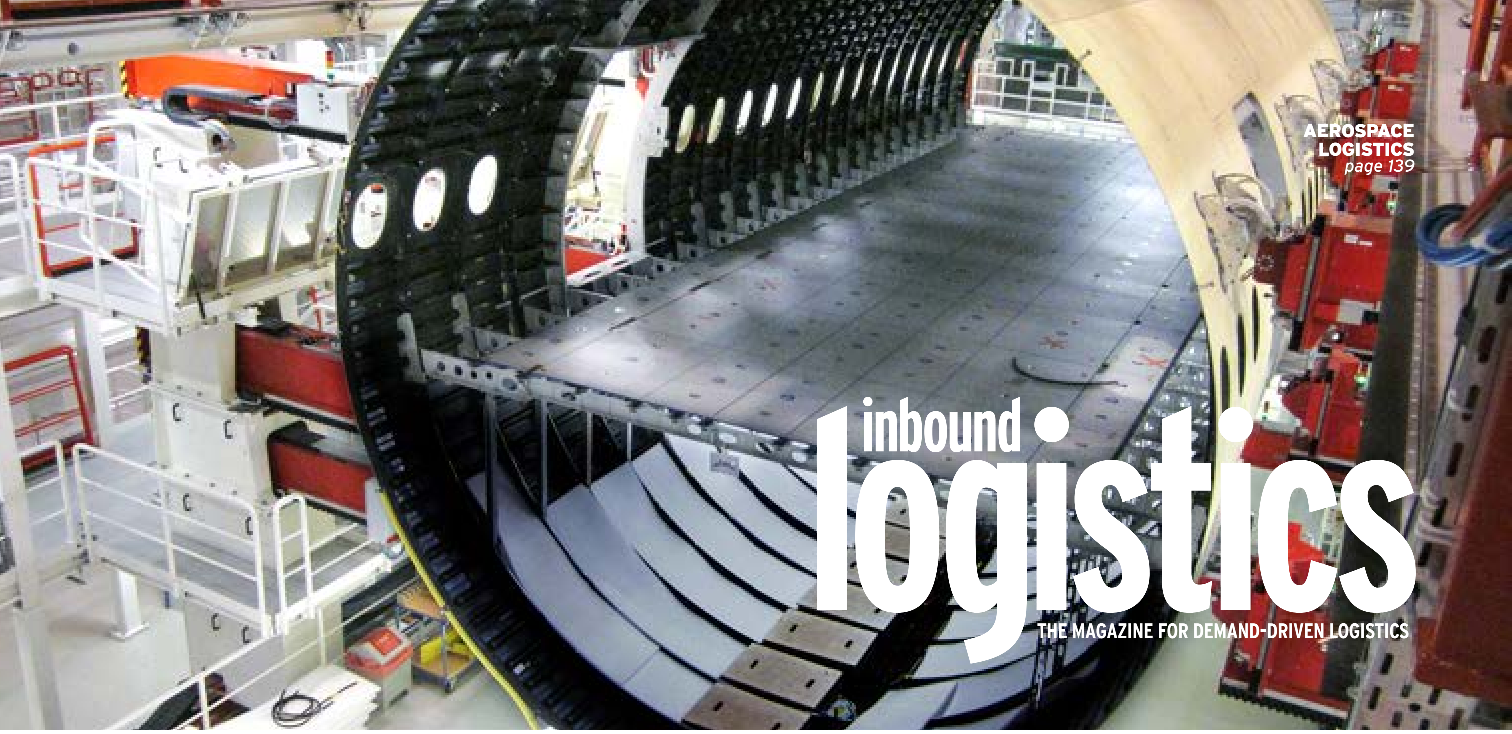
## INSIGHT




## INPRACTICE



## INDEPTH






**January 2014** • Vol. 34 • No. 1

## INSIGHT

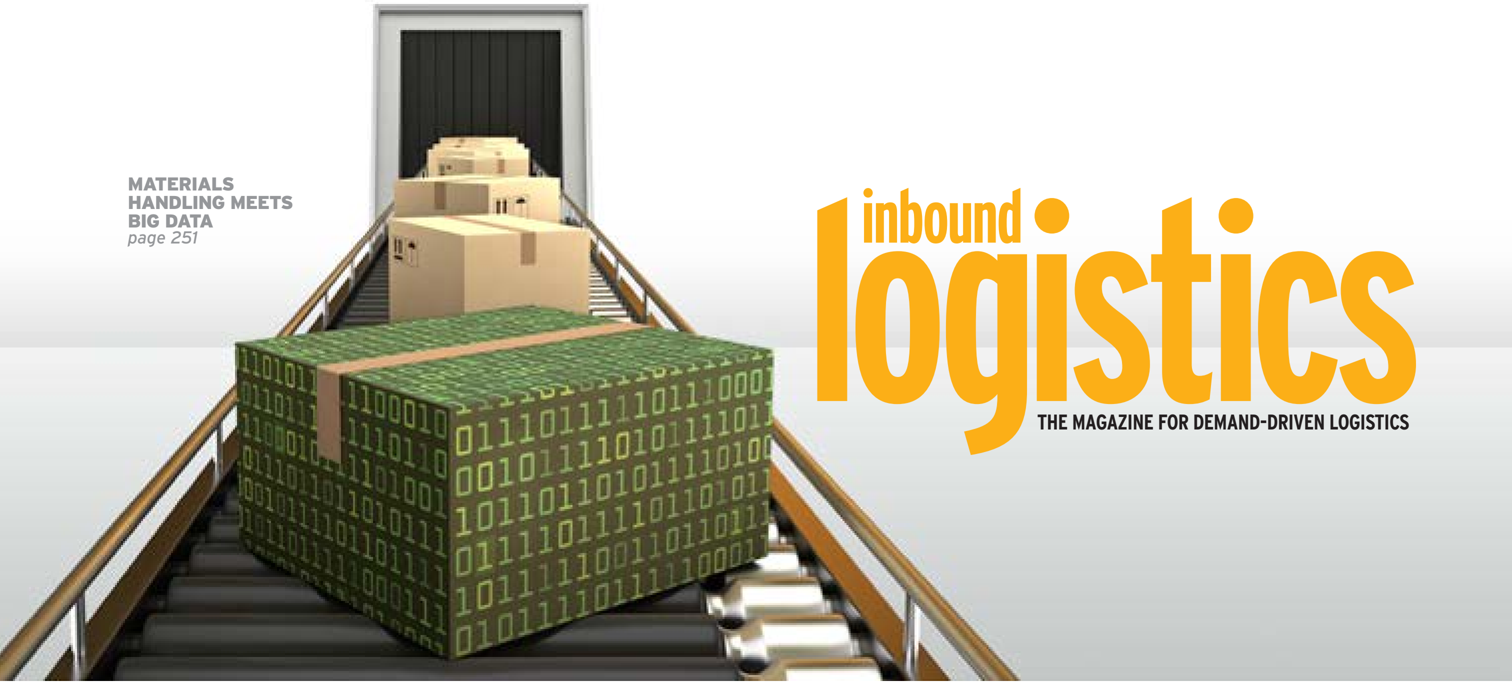


## INFOCUS



## INDEPTH



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## INFO




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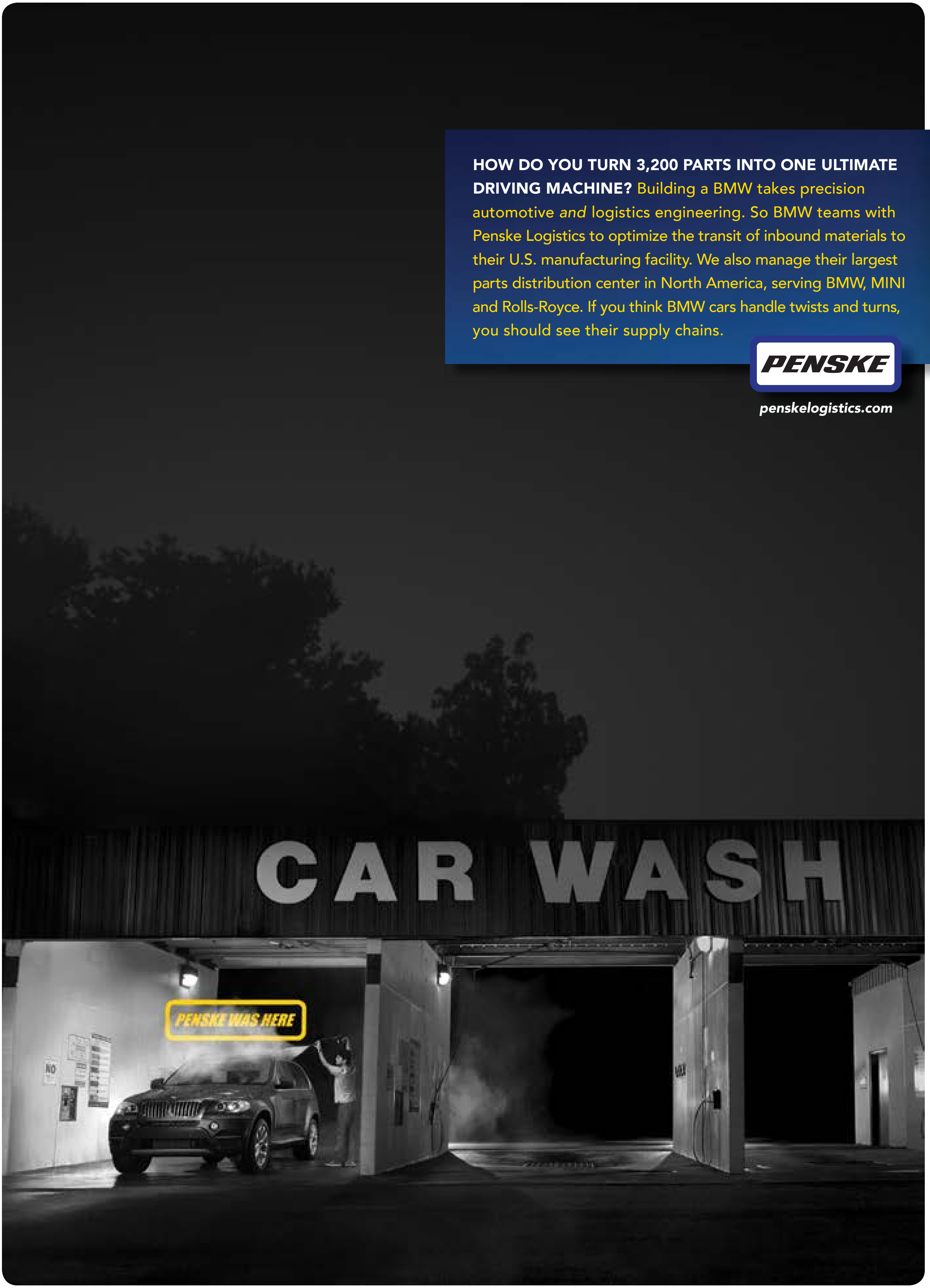

HOW DO YOU TURN 3,200 PARTS INTO ONE ULTIMATE DRIVING MACHINE? Building a BMW takes precision automotive *and* logistics engineering. So BMW teams with Penske Logistics to optimize the transit of inbound materials to their U.S. manufacturing facility. We also manage their largest parts distribution center in North America, serving BMW, MINI and Rolls-Royce. If you think BMW cars handle twists and turns, you should see their supply chains.
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# CHECKINGIN

by Keith Biondo | **Publisher**

## Year of Uncertainty?

2014 IS SHAPING UP AS A YEAR OF UNCERTAINTY. Retail sales are off, the stock market is skittish. Healthcare, energy, and regulatory policies are in flux, and unemployment levels and consumer confidence are scary. Uncertainty reigns for many.

In the face of all this, growth is assured for some of us. The others are tasked with making our own economy in the vortex of uncertainty. The obstacles to doing that may be many, and largely out of our control. But offsetting solutions are plentiful. Here are some ways to energize your enterprise:

**Talking is working.** People buy from people, and work with people. One low-cost way to energize your operation is to get in more face time with peers, vendors, and customers. We all share some measure of uncertainty, and we are all in it together, so get closer.

**Tear down this (digital) wall.** We are all busier than we've ever been, and there are many more transactions to manage, so greater reliance on technology is one obvious solution. But, try to make time for non-digital communication with people in your value chain. Exception: the regular use of video conferencing via Skype or GoToMeeting.

**Think.** Too busy to get the five-mile-high view of your operation? Are you running in place without an updated and clear view of how and what you and your team are doing reflects your enterprise's competitive ability? Take time to think.

**Empower your team.** One surefire way to boost productivity is to empower your team to a greater extent than ever. Errors will occur, sure. But the increased energy, passion, and ideas they contribute will more than offset those rookie mistakes.

**Hire (Vets).** A deep, rich, and experienced pool of veterans is out there with the drive, experience, and leadership skills that can contribute greatly. And they need the opportunity. Make room on your team for these veterans. You won't be sorry.

**Plan a supply chain intervention.** Is a corner of your warehouse underutilized? Do you have a WMS or IT project you've been meaning to get to, but just haven't? A project or planned initiative that gets punted year after year? Plan some weekend work days with your team to specifically tackle those projects. Yes, I know, it's the weekend. But in a year of uncertainty, get 'er done.

**Rely on vendors, carriers, and providers.** Many readers already do this with great result. Your carriers and logistics solutions providers have likely already invented—or at least are aware of—the wheel spinning out of sync in your operation. Transportation and logistics services and solutions providers are practical problem-solvers. Sure, they want to sell you something. But their experience comes along free. Establish that kind of dialogue, and together you'll limit some uncertainty.

Some of these ideas may not be a fit for you, but most will agree that one way to mitigate uncertainty is to use demand-driven logistics practices in the coming year. This issue's cover story (*page* 77) can help you do that.

Partnering with the right carrier, technology vendor, or logistics provider also acts as a force for supply chain stability, and tackles immediate transportation and logistics challenges head-on. More importantly, the right partners give you the ability and enhanced expertise to drive true enterprise change. *Inbound Logistics*' mission is to help you find the right fit to get that done. The Logistics Planner (*page* 339) will work for you when and where you need it, any way you want it: in print, Web, digital, tablet, or iPad editions.

Whether or not you foresee a year of uncertainty in 2014, applying inbound logistics best practices and *Inbound Logistics* will help. That's a certainty. ■

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# CHECKINGIN

Felecia Stratton

by Felecia Stratton | **Editor**

## Well, There's One Thing That's Certain...

If there's one certainty, it's that some things never change—sometimes for the worse, but often for the better. Consider this issue you are now thumbing or clicking through. The 2014 Logistics Planner marks *Inbound Logistics*' 20th anniversary of publishing what has become an industry standard.

Such longevity is validation that our mission-based focus remains as relevant today—if not more so—as it did 33 years ago when we launched this magazine; as well as when we debuted our first Logistics Planner in January 1995.

That first Planner was all of 96 pages, featuring 29 profiles. Our 2014 edition tops out at 504 pages, with 159 profiles. Flip to page 339 and check out this year's participants. The organizations featured in this directory are the epitome of consistency and excellence. Many have been strong supporters of *Inbound Logistics* and our mission from the very beginning.

The Planner's purpose, then and now, is straightforward—match shipper need to an array of service providers across geographies, modes, functions, and technologies. Editorially, this demand-driven vibe resonates throughout.

Our cover story, 163 Ways to Supercharge Your Supply Chain *(pg. 77)*, offers a composite of actionable tips to help you optimize operations through a number of different functional areas. From kicking the tires on a new truckload partner to carefully treading customs compliance, use this practical how-to guide to identify possible cost leaks, plug inefficiencies, then pump up your supply chain.

Looking for a shipper perspective? Catherine Overman's interview with Gilt Chief Supply Chain Officer Chris Halkyard *(pg.175)* goes inside the flash sales phenomenon; meanwhile George Calvert, chief supply chain and R&D officer at Amway, offers a soup-to-nuts survey of the world's largest direct-selling company *(pg. 119)*

Moving along modally, our Rail Trends conference wrap, Shared Strategies, Mixed Signals *(pg. 193)*, puts you in the front row of one of the industry's premier events. If speed and cold temperatures are more your style, Lisa Terry's Perishable Logistics article *(pg. 151)* is required reading.

Merrill Douglas' article Made In Mexico *(pg. 231)* offers a primer for shippers considering nearshoring south of the border—which, as you'll read in Supply Chain Risk *(pg. 163)*, is one aspect of physical mitigation that shippers use to prevent supply chain disruptions.

Whatever your uncertainty quotient for 2014, the Logistics Planner will help you master the variables to drive efficiency and supply chain excellence. ■




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# DIALOG

THE ONGOING CONVERSATION

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"I could not survive without *Inbound Logistics* in my world of transportation. I consider it the Bible of Logistics."

–Bill McClennen

**Blackhawk Logistics** @LogisticsBlkhwk
6 DEC 2013
Great news for Charleston, South Carolina. RT @ILMagazine: Opportunities in the Southeast are Fueling Logistics Growth. bit.ly/17J7nOw

**Rich Weissman** @rich_weissman
16 DEC 2013
@ILMagazine. Good article on supplier compliance. A bit heavy-handed, but food for thought. bit.ly/1hd019J

**John Lowe** @supplychainlowe
19 DEC 2013
@ILMagazine...Great publication with tons of info on the logistics industry. Follow them!

I am teaching a course on Logistics this semester, and would like to have my students subscribe to your magazine in electronic format. Is there a way I can get this done all at once by providing you with a list of names and email addresses?

**Gerry Holowicki,** College of Business, University of Michigan-Dearborn

**EDITOR'S REPLY:** *Inbound Logistics* has a long history of supporting logistics and supply chain education, so feel free to use our materials for any course-related purposes. Just provide us a list of student names, school, city, state, country, and e-mail and we'd be happy to distribute electronic issues.

I enjoy the *Inbound Logistics* website and magazine very much. I hope to be able to utilize it even more this year.

**Matt O'Dowd,** Chefs Warehouse

Things ought to be looking good in the upcoming year for the *Inbound Logistics* team, based on the potential of military force structure adjustments. *IL*'s value to military logisticians will triple, and I will continue to pass it along as a great resource.

**Jason A. Ballard,** MAJ, GS, Secretary of the General Staff, Third Infantry Division, Fort Stewart, Ga.

I love your magazine articles. I just finished my BS degree in interdisciplinary studies, and your articles were very useful to me. They are packed with helpful information, especially on technology.

**Mike J. Fierley**

Regarding your Global Logistics item, *Can India Overcome Supply Chain Obstacles* (December 2013), India does not have the north-south rivers that it needs, and a major city such as Mumbai has no rivers.

**Lewis B. Sckolnick,** Rector Press Limited

**HOT TOPICS | *IL* articles getting the most impressions on LinkedIn:** Intermodal Efficiencies: bit.ly/19YFtgu • Technology Supports 3PL-Carrier Partnerships: bit.ly/1b5ykP4 • How to Take Advantage of Intermodal Transportation: bit.ly/1hOUpDu • Trucking Perspectives 2013: bit.ly/14GRg5e • Study Up on Supply Chain Degrees With Added Value: bit.ly/18Z5H1K • Automating B2B Payments: The Next Frontier: bit.ly/1fcLHkV • How to Transform Your Supply Chain Through a 4PL Approach: bit.ly/IeJJ5f

# 10TIPS

STEP-BY-STEP SOLUTIONS

by Deborah Catalano Ruriani

# Building a Core Carrier Program

When developing a base of reliable core motor carriers, customer service and on-time success typically drive the selection process. But don't overlook factors such as company stability and labor quality. Streamline your carrier program to a select few using the following tips.

1 **Look beyond cost.** When selecting partners, don't focus solely on cost-cutting strategies. While reducing costs is important, you are looking to establish a long-term relationship that offers value. Performance will be key to that success. Review on-time performance percentages and claims rates, then examine overall return on investment, rather than just price.

2 **Evaluate the carrier's capacity.** Compare your lanes to the carrier's lanes. In order to move freight to a destination, the carrier must have enough trucks and drivers to assign. Tour its facility, and ask for references who can attest to the breadth of coverage, as well as the carrier's ability to regularly deliver on time and claim-free.

3 **Demand flexibility.** Ensure the carriers in your core program can accommodate change—especially if your company tends to switch direction often, frequently introduces new product lines, or plans to expand. Can the carrier's staff handle special requests? Does it have enough labor and equipment to accommodate your peak seasons or new product launches?

4 **Meet the players.** You may be tempted to sign on the dotted line because you were impressed with the carrier's executive team and sales reps. But get to know the front-line staff, too. Meet the company's drivers—they are the people who interact with your customers.

5 **Consider the carrier's insurance coverage.** Ask to see the trucker's certificates of insurance, and understand how much and what kind of coverage it carries. You also want to have your company name listed as "additionally insured," and verify that the carrier retains liability limits proportionate with the value of your largest anticipated shipment.

6 **Insist on a dedicated contact.** While a 24-hour centralized service department is helpful, you need a single point of contact within the carrier organization—someone dedicated to your account who understands your business. While others can assist, it's important to have a liaison for troubleshooting.

7 **Check financial stability.** Find out how long the trucker has been in business, and check its references, as well as its credit and Dun & Bradstreet ratings. You want to partner with a carrier that has resources and can invest in the proper equipment to deliver your goods.

8 **Assess geographic coverage.** Compare your company's delivery requirements against the carrier's geographic coverage. Can the trucker easily reach all the destination points you require?

9 **Confirm technology resources.** The carrier should have invested in electronic data interchange, satellite truck and trailer tracking, and a bar-code solution. These tools help provide vital shipment visibility.

10 **Don't be afraid to switch.** The hardest thing to do is end a relationship with a longstanding partner. While comfort level and relationships are important, you should continually evaluate the carrier's performance vs. your expectations and costs. Create and monitor key performance indicators. If the carrier is not meeting your criteria, address the problem, or consider switching to another provider. ■

READER

PROFILE

as told to Merrill Douglas

**Sean Vasquez is EDI and transportation manager at Sun-Maid Growers of California in Kingsburg, Calif. He has worked for the company since 2010, and held his current position since 2013.**

**RESPONSIBILITIES**

Managing all electronic data interchange (EDI) functions; working with the IT department and trading partners to resolve EDI issues; managing transportation policies, rates, and analysis for 17 warehouses in the United States and Canada.

**EXPERIENCE**

Warehouse lead, accounts payable, help desk supervisor, programmer/EDI administrator, Oberto Sausage Company; manager, EDI and e-commerce, Sun-Maid Growers of California.

**EDUCATION**

BS, business administration, City University of Seattle, 2006.

# Sean Vasquez: Heard it Through the Grapevine

BEFORE I CAME TO SUN-MAID, I WORKED FOR 20 years at Oberto Sausage in Kent, Wash. I started in the warehouse, but ended up in information technology (IT) and electronic data interchange (EDI).

I didn't study IT in college. I was able to move into that field because the IT manager liked my interpersonal skills. My position at Oberto involved collaborating with people and defusing tense situations. I learned the technical side, including programming, mostly on the job. I also took classes, read books, and learned from my boss.

At Sun-Maid, my first responsibility was managing the EDI environment and relationships with our 150 trading partners, including customers, banks, brokers, third-party warehouses, and carriers. One of my functions is to resolve EDI issues, such as a warehouse sending a customer an advance ship notice with incorrect data. If we don't quickly address those issues, customers might impose fines or deductions.

In 2013, I also started managing transportation from our 17 forward warehouses to our customers. The third-party logistics providers that run those warehouses often use their own fleets to move product to our customers.

Sometimes, however, we determine that a different carrier can offer a better rate on a particular lane. We might renegotiate certain freight rates, depending on how much volume we're able to shift to a

## The Big Questions

**If you could give a piece of advice to your 18-year-old self, what would it be?**

It's the same thing I'd tell my son today: start college right after high school. Working full time while going to school is difficult. It took me 15 years to earn my degree.

**What's the strangest situation a job has ever thrown your way?**

When I was help desk supervisor at my previous company, one of our sales representatives set her purse down in a bathroom sink that she didn't realize had an automatic faucet. Her smartphone got soaked. She asked if we could retrieve her contacts, even though the device wouldn't turn on. I said, "There's your answer."

**With whom would you like to change places for a day, and why?**

Nobody. I would miss my wife and kids too much.

**What's on your bucket list?**

Visiting every major league baseball stadium. I've been to about one-third of them already. I also want to skydive.

particular carrier, or other carriers might offer a deal.

Sun-Maid is a co-op owned by raisin growers. We receive raisins from our members, along with other varieties of fruit we buy from non-member suppliers. We package the product and ship it via intermodal or truckload to third-party distribution centers located across North America.

One new project Sun-Maid is working on involves implementing a radio frequency system in our Kingsburg, Calif., facility. As part of that project, I'm helping to redesign case labels, and changing our lot coding format. We've streamlined much of the information on the label, and added a two-dimensional bar code embedded with the item number and lot code.

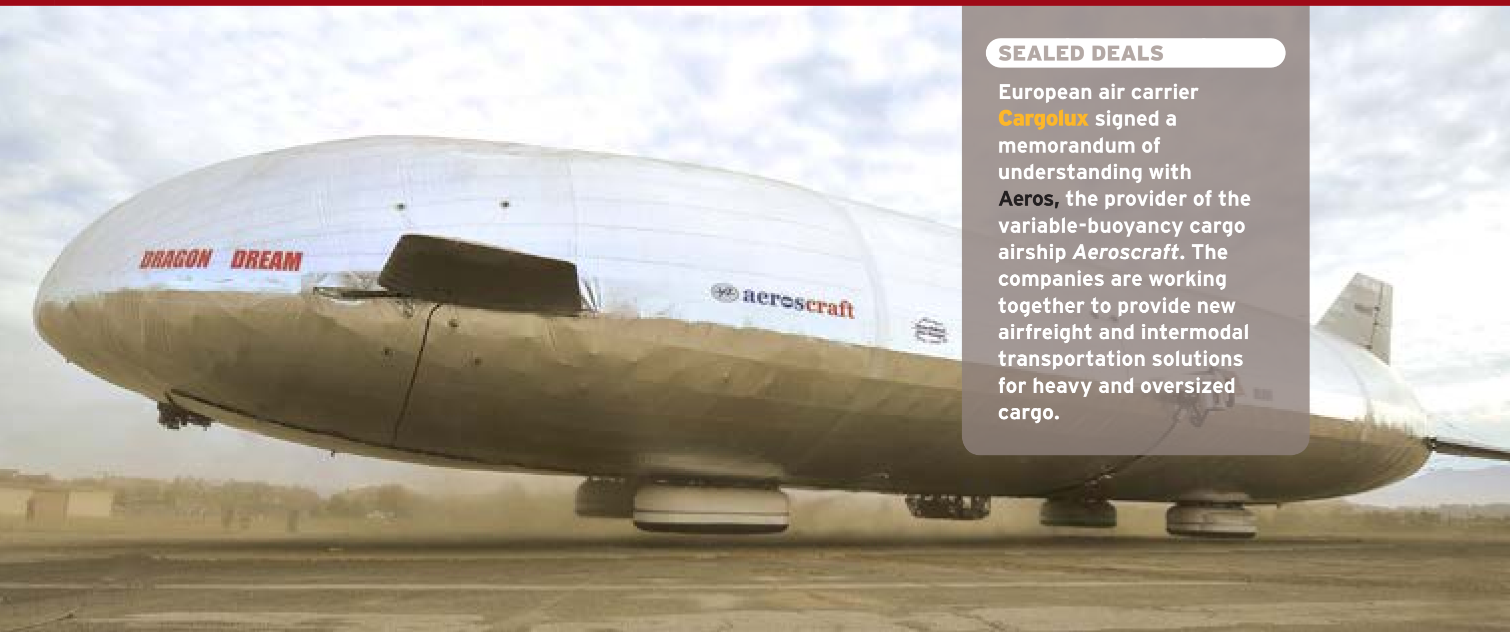
Switching from manual data entry to scanning will boost the efficiency of many warehouse functions. I also will coordinate the lot code changes with our forward warehouses, to ensure those changes are implemented correctly in their systems.

I love being able to directly affect the company's bottom line. As one example, we recently reduced shipping costs for one of our regional warehouses by 25 percent by switching to a new West Coast carrier.

While we're always looking to reduce costs, we never want to use a low-cost carrier that provides inferior service. Our top priority is servicing our customers according to our own high standards. But if we can save money at the same time, that's icing on the cake. ■

# NOTED

THE SUPPLY CHAIN IN BRIEF




**SEALED DEALS**

**European air carrier Cargolux signed a memorandum of understanding with Aeros, the provider of the variable-buoyancy cargo airship *Aeroscraft*. The companies are working together to provide new airfreight and intermodal transportation solutions for heavy and oversized cargo.**

## m&a

**Celadon Trucking** expanded its Canadian footprint and services with the purchase of **N. Yanke Transfer,** a trucking company specializing in intermodal container and expedited transport. The acquisition moves Celadon into the Canadian container rail market, and adds 300 tractors to the carrier's fleet.

Trucking company **Roehl Transport** purchased cold storage specialist **Brock Cold Storage and Trucking**. Roehl now operates Brock's cold storage business as Roehl Cold Storage, while Roehl Transport has integrated Brock's trucking business and assets.

## SEALED DEALS

Collectibles retailer **Lionel Racing** expanded its use of **Oz Development's** *OzLINK* order management solution by adding *OzLINK* Mobile. The solution provides wireless bar-code scanning processes that streamline picking, receiving, and inventory management. Lionel also added *OzLINK* Channel to integrate external e-commerce applications into its existing ERP.

Retailer **Urban Outfitters** contracted with **Vanderlande Industries** to design and build an automated materials handling system at a new fulfillment center in Gap, Pa. The new system utilizes a hybrid concept, featuring batch pick and mini-batches, allowing for efficient multichannel order fulfillment.

**DB Schenker** was named the official third-party logistics provider for the **Toronto 2015 Pan Am/Parapan Am Games.** Schenker of Canada will provide 75,000 square feet of warehouse space, warehouse and distribution operations, and freight transportation. The 3PL will also manage customs clearance and freight forwarding for the event.

▼ **ABB Group,** a provider of power and automation technologies, implemented **Amber Road's** global trade management solution to centralize its global supply chain. The system also optimizes landed cost analysis and sourcing decisions.

## GREEN SEEDS

▼ **CN** extended its EcoConnexions From the Ground Up program for an additional three years. The program provides grants of matching funds up to $25,000 to Canadian communities to improve green spaces and plant trees.

**CSX** and **GE Transportation** partnered to develop a pilot program for liquefied natural gas (LNG) locomotives, scheduled to launch in 2014. The LNG locomotives are expected to reduce harmful emissions, divert traffic from highways, and lower fuel costs.

## m&a

Logistics IT provider **Ingram Micro** acquired **Shipwire**, a supplier of Software-as-a-Service (SaaS) supply chain solutions. Through the purchase, Ingram Micro gains Shipwire's on-demand SaaS capabilities, a service the company previously lacked.

Global beverage logistics company **JF Hillebrand Group AG** purchased **Satellite Logistics Group** (SLG), a supply chain solutions provider also focused on the beverage industry. SLG continues to operate under the same name.

## recognition

As part of the **2013 Mastio Quality Awards**, Mastio & Company named **Old Dominion Freight Line** (ODFL) its National Less-Than-Truckload Carrier. In Mastio's survey of more than 2,000 transportation decision-makers, ODFL ranked highest in shipping service quality, driver courtesy, proactive communication, and trust. The carrier is the first company to receive this award four years in a row.

Logistics technology provider **Manhattan Associates** received the **Brandon Hall Gold Award for Best Custom Content** for its distribution center operations e-learning course. A panel of industry experts, executive leadership, and senior analysts cited the course for content, design, functionality, innovation, and overall measurable benefits.

Guided robotic vehicle manufacturer **Seegrid Corporation** earned the **2013 Best Manufacturer of the Year Award** from the *Pittsburgh Business Times*. The award recognizes Seegrid's fast company growth and the quality job opportunities it offers in the Pittsburgh area.

Lufthansa Cargo honored logistics provider **Dachser USA** with its **Quality Award** for 2013. Lufthansa grants the awards following an evaluation of key performance indicators, including scope of services, on-time deliveries, and care in cargo handling.

Third-party logistics provider **Allen Distribution** was named Whirlpool's **Regional Truckload Carrier of the Year** for 2012. Allen, which moves 10 to 20 truckloads of Whirlpool appliances daily from a Carlisle, Pa., distribution center, was recognized for on-time delivery, damage claims handling, problem resolution, and invoicing accuracy.

Africa Oil & Gas named **Halliburton** the **Logistics Company of the Year** for moving the African oil and gas industry forward by establishing new routes and operations in Ethiopia, Kenya, Uganda, Tanzania, Namibia, and Ghana.

**The American Trucking Associations awarded regional carrier A. Duie Pyle the President's Trophy in the mid-size class. This is the third time A. Duie Pyle has received the award, which is given to the carrier with the best overall safety program.**

## m&a

Trucking company **Manitoulin Transport** bought **Smooth Freight,** a truckload and LTL carrier. The purchase adds 25 trucks and more than 200 trailers and dry vans, as well as temperature-controlled, flat deck, and tail lift trailers, to Manitoulin's fleet. The acquisition also increases Manitoulin's service offerings in western Canada.

**JobsInLogistics.com,** a job board for the supply chain and logistics industries, acquired **NetTemps.com.** The acquisition increases traffic to both sites, and provides a broader range of logistics candidates to potential employers.

## UP THE CHAIN

**J. Russel Bruner** was named the new president and CEO of **Maersk Line, Limited.** Bruner has been president and CEO of Maersk Inc. since 2004, and will move to his new position in February 2014.

**Focus Brands,** a company known for the Auntie Anne's, Cinnabon, and Carvel brands, appointed **Barry Moullet** chief supply chain officer, a newly created role for the company. Moullet oversees all supply chain and logistics functions, and is responsible for the company's efforts to consolidate its multiple supply chains under one umbrella.

Third-party logistics company **CRST Logistics** appointed **Kent Jordan** its new president. Jordan brings a range of experience to the position, including corporate planning and strategy, multi-site management, and high-level customer relationship management.

**John Martin** was named **Nissan North America's** senior vice president of manufacturing, supply chain management, and purchasing. Martin previously held a similar role for Nissan in Europe, and is now responsible for Nissan's procurement and supply chain operations in North America.

## GOOD WORKS

▼ **DHL Express** provided transportation services for DHL Operation Holiday Cheer. For the 10th consecutive year, DHL Operation Holiday Cheer sent fresh-cut Christmas trees, holiday letters, menorahs, decorations, and gifts to U.S. military personnel in Afghanistan and Bahrain.


Trinity Logistics' charitable arm, **Trinity Foundation,** hosted its fourth annual Touch-A-Truck event, raising $6,500 for **Rachel's Challenge,** an organization that increases awareness about violence and bullying. The show displays big rigs, construction equipment, and emergency vehicles for children to see up close.

Freight broker **Scott Logistics** committed to donate a minimum of $5,000 to Corporate America Supports You, a non-profit that helps veterans find jobs related to their military skillset. Scott donated a portion of the money in November 2013, and will continue to donate each quarter in 2014.

**Southeastern Freight Lines** associates served 1,323 hours of community service in 2013 as part of the company's Southeastern Serves initiative. The program is dedicated to giving back to communities in Southeastern's service area by providing for the less fortunate.

**Florida East Coast Railway** repainted two of its locomotives to promote breast cancer awareness. The short line railroad was also a naming sponsor for North Florida's Susan G. Komen Race for the Cure.

# TRENDS

SHAPING THE FUTURE OF LOGISTICS

## Getting Demand Forecasting in Hand

by Joseph O'Reilly

In the demand-driven logistics domain, forecasting is king. Companies that are best able to predict sputters and spikes, then react and execute against those signals, will gain a competitive advantage. But given today's market uncertainty—the economy, consumer purchasing power and appetite for new products, sliding holiday seasonality, and emerging omni-channel challenges—demand forecasting is no simple task.

SKU proliferation only adds to the problem by creating more complexity upstream in the supply chain. This reality is underscored in Terra Technology's *2013 Forecasting Benchmark Study*, which surveys demand-planning performance among 11 multinational consumer products organizations.

The Norwalk, Conn.-based IT company's research delivers several key findings:

■ The rise in supply chain complexity has been fueled by an annual 10-percent growth in items since 2010.

■ An upswing in seasonal and transient products adds further complexity as item-locations rose nearly 20 percent in 2012, compared to only five percent for non-seasonal items.

- Forecasts for promotional activities and new product introductions are overly optimistic, with bias four to five times higher than regular sales, creating a considerable inventory burden on the industry. (Bias refers to forecast error, specifically consistent under-forecasting or over-forecasting). Top performers are better at not over-forecasting promotions, with bias of just two percent compared to the average of 16 percent.
- The slowest-moving items logged two-thirds more errors than top sellers. These slow-moving products, which account for about 80 percent of all items, require 60 percent more safety stock to ensure consistent fill rates.

*Inbound Logistics* recently met with Robert Byrne, CEO of Terra Technology, to talk about the study and some trends shaping demand-forecasting dynamics.


Robert Byrne, CEO, Terra Technology

**Q: What market pressures make forecasting so 'unpredictable' and challenging?**

The major problem, at least in consumer products, is innovation. Many CEOs see innovation as a growth strategy. We're not seeing a lot of growth, but we are seeing 23 percent more items (SKUs) than four years ago. That's a staggering increase with sales up only slightly. These SKUs are mostly new items—one-third have been created in the past two years—so they're much harder to predict because no history exists.

The other challenge is the Internet—the consumer's ability to compare prices and buy online. Demand is getting less geographic than it used to be. The average volume per item is down 17 percent, so manufacturers and retailers are slicing customer demand in more ways. They're not selling 23 percent more 'stuff.'

**Q: Many manufacturers and retailers are still trying to feel their way around e-commerce and omni-channel management—especially how it impacts demand. Will we reach a point where companies are better able to get a handle on forecasting, or is this level of unpredictability a new normal?**

It's a little of both. Marketing will continue to press for innovation, and I don't see that slowing down. Retailers want products that are specific to them—some of the grocery chains and Walmart want more exclusive products.

On the other hand, there is more of what I call automated unilateral collaboration. Manufacturers are leaning forward trying to understand and predict what retailers are going to do. This helps because it allows manufacturers more control over product flow to retailers. It's a great opportunity to improve how forecasting works.

**Q: Where do companies most often err when it comes to forecasting?**

Companies most often fail with sales and operations planning, or integrated business planning to control factors such as bias. New items and promotions create staggering amounts of bias in some companies. Inevitably, that leads to over-production, leftover product, and less space to store inventory. It's a process failure in that sense.

**Q: Does big data contribute to this problem?**

It's an area where the applications are only the tip of the iceberg. It reminds me of Y2K, when companies implemented new ERP systems and had clean, unified data. Then they were surprised when systems weren't optimized and they had to buy new supply chain software.

Here's another example: A company says it has 70 percent of sales covered in its data warehouse. But what are they going to do with it? People are beginning to grapple with the 'where is my ROI?' question. To date, companies haven't taken a structured and comprehensive approach to big data; it has been more anecdotal: "This customer is looking at these items." Companies will need more technology because they simply don't have enough analysts to look at data.

**Q: Over the past few years, we've seen retail peak season change with the weather. Let's make a forecast: What can we expect over the next few years?**

Peak season is a lot like SKU proliferation. Stores are opening on Thanksgiving now; one retailer started its Black Friday sale on Tuesday. Whenever one retailer starts something new, another will try to beat it.

I predict peaks will continue to get lower, and demand patterns will spread out more. Much of this is due to marketing fighting for incremental sales and shares. That said, I'm not convinced this strategy will actually drive revenue.

**Q: Better forecasting drives demand-driven logistics strategies. How are shippers progressing toward this reality?**

Companies have been focused on being demand-driven for a while. Still, a lot of confusion surrounds what that actually means. Demand-driven logistics suggests

two things: First, shortening supply lead times—not having a six-week frozen schedule, but rather a one-week or one-day frozen schedule; and second, improving demand signal quality.

The shorter the lead times, the faster a company can act, and the more accurately it can forecast. It cuts down on all the supply chain noise.

Technology plays a big part in this transformation, because companies can't realistically staff to a point where they have enough forecasters to publish a schedule like this every day for every item at every location—while at the same time monitoring everything retailers are doing and reflecting that in the forecast. It's impossible.

**Q: What's the next step companies are working toward with regard to demand forecasting?**

Forecasting is traditionally just a seasonal model. You sell more hot dogs in the summer, sweaters in the winter. It stands to reason that if you feed your forecasting system all your different demand signals—channel inventory, point-of-sales data, macroeconomic factors—it will come up with the most likely amount of demand. That's the promise of demand sensing. Twelve different demand signals can go in, and a very accurate forecast comes back. That's where it's going from the technology side.

From a process and business perspective, manufacturers leapt to on-shelf availability. Now they are saying, "I might not be able to impact on-shelf availability, but I want to understand everything that's happening from the demand signal upstream."

So manufacturers will be taking more control over the retailer supply chain. They have a stronger interest in on-shelf availability than retailers do for their particular product.

## U.S. Formulates Maritime Security Plan

The U.S. government has taken a step to streamline security protocol for ocean movements by creating the National Maritime Domain Awareness Plan. "Notably, 90 percent of the world's commerce moves by sea, making maritime security essential to the global supply chain and international trade," says Caitlin Hayden, a National Security Council spokeswoman.

The new initiative streamlines and merges two existing protocols–the National Plan to Achieve Maritime Domain Awareness and the Global Maritime Intelligence Integration Plan–both of which were published in 2005.

Many federal agencies and departments came together to create the new National Maritime Domain Awareness Plan, designed to boost security.

The new plan places emphasis on public-private collaboration to address maritime security concerns, as well as improving shared-information capabilities between the two sectors.

"Using a whole-of-nation approach, at minimal cost, the plan promotes favorable conditions for integrating and sharing information–including intelligence–to better inform decisions affecting the security, safety, economy, and environment of the United States and the global maritime commons," Hayden adds.

## Hours-of-Service Makes an Impact

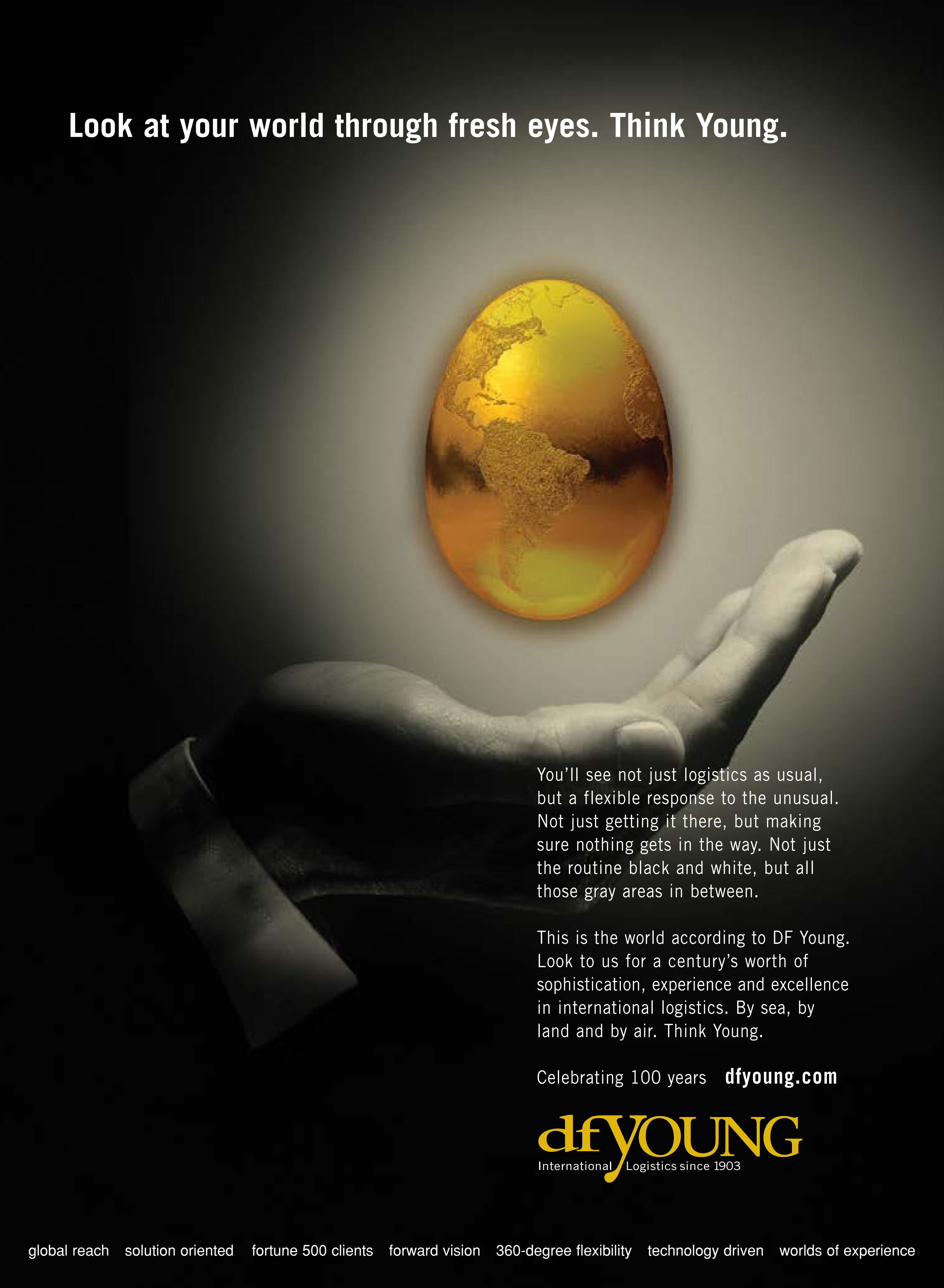
One problem trucking industry advocates raised after the Federal Motor Carrier Safety Administration's amended Hours-of-Service (HOS) regulations entered into force in July 2013 was the government's failure to properly study the ramifications of such a ruling—a provision that had been laid out in the Obama Administration's MAP-21 Act.

Now the American Transportation Research Institute (ATRI) has taken up the gauntlet. The Arlington, Va.-based research organization recently released findings from its analysis of HOS operational and economic impacts—specifically the provisions that limit use of the 34-hour restart, and require a rest break before driving after eight hours on duty.

ATRI surveyed more than 2,300 commercial drivers and 400 trucking companies, then conducted detailed analysis of logbook data representing more than 40,000 commercial drivers.

Among its findings:

- More than 80 percent of motor carriers surveyed have experienced a productivity loss since the new rules went into effect.
- Nearly half report that they require more drivers to haul the same amount of freight.
- Among commercial drivers, 83 percent indicate the new HOS rules have had a negative impact on their quality of life; more than 66 percent cite increased levels of fatigue. Ironically, rules that are meant to enhance trucking safety are doing the opposite. Commercial drivers are forced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to drive during more congested time periods, which raises new fatigue concerns.

■ A majority of over-the-road drivers (67 percent) report decreases in pay since the rules took effect. The impact on wages for all drivers totals $1.6 billion to $3.9 billion in annualized loss.

"We anticipated significant impacts on our operations and across the entire supply chain from the new rules, and our experience is bearing that out," notes Kevin Burch, president of Jet Express, a Dayton, Ohio, trucking company.

"ATRI's analysis clearly documents the productivity impacts and real financial costs borne by carriers and drivers," he adds. "It's only a matter of time before these impacts ripple throughout the nation's economy."

Meanwhile, Congress has inserted itself back into proceedings. A bill sponsored by Sen. Kelly Ayotte (R-NH) and Sen. Mike Johanns (R-Neb.) was introduced in the Senate on Dec. 20, 2013. If enacted, the TRUE Safety Act would:

■ Halt the most recent HOS rule change.

■ Require the Government Accountability Office to perform an assessment of the Federal Motor Carrier Safety Administration's methodology in creating the rule—specifically the research that went into developing the 34-hour restart provisions.

■ Allow truck drivers to operate under the pre-July 1 rules again, until further notice.

The legislation is a counterpart to a House-led effort in October 2013 that similarly called for an independent review and assessment of the HOS changes and their impacts on trucking productivity.

### HOS RULES HIT SHIPPERS

The change in HOS rules will have a marked impact on shippers: it will take longer to transport products and force more truckers on the road, suggests a new study from the Global Supply Chain Institute at the University of Tennessee-Knoxville.

Fifty-eight percent of the 417 companies surveyed expect an increase in carrier rates—a cost that will eventually be passed along to customers.

"In this economy, companies won't want to damage relationships with customers by raising prices," says Mary Holcomb, an associate professor and the study's author. "Carriers may be unable to absorb these increased costs, so companies will have to improve operations to minimize their impact."

## Top 10 Manufacturing and Supply Chain Predictions for 2014

**To illuminate manufacturing and supply chain trends for 2014, Framingham, Mass.-based market advisory firm IDC Manufacturing Insights hosted a web conference with industry thought leaders. Their predictions are aimed at helping companies capitalize on emerging market opportunities, and plan for future growth. The top 10 predictions for 2014 are:**

1 Manufacturers begin to build 3D value chains.

2 Operational, information, and consumer technology converge to reshape approaches to technology management.

3 Operational resiliency will be the focus of supply chain strategies in 2014 and beyond.

4 Supply chain technology investment will involve modernizing existing systems, while also trying new approaches.

5 The modernization of the underlying B2B-commerce backbone becomes an investment priority for IT.

6 Product lifecycle management (PLM) strategies become increasingly global, multidisciplinary, innovation-based, and customer-focused.

7 On the way toward the factory of the future, 2014 will set the stage for a new manufacturing renaissance.

8 PLM initiatives will focus on value realization.

9 "Servitization optimization" will be core to future profitable revenue growth, and leading manufacturers will make the necessary investments to enable these strategies.

10 Plant floor IT investments will continue to become a higher share of the overall technology investment portfolio.


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# 5 Tips for Mapping Your Supply Chain

With natural disasters, corporate responsibility issues, and health and safety failures increasing, mapping the supply chain down through every tier is the only way to mitigate a growing burden of risk.

To avoid the pitfalls, follow these five tips for mapping your supply chain:

**1. Recognize the risks.** You may know your first-tier suppliers pretty well, but how well do you know your suppliers at tiers two and three?

Have you gauged how critical they are to your supply chain? Do you know where they make your branded goods or components? What would happen to your business if a lower-tier supplier failed to supply due to an earthquake, civil unrest, or financial collapse? What would be the impact to your brand if a second- or third-tier supplier was exposed as using child labor? Most would not know, yet a brand's value could be eroded or destroyed through the errant actions of a lower-tier supplier.

**2. Create visibility.** A study commissioned by global supply chain risk management company Achilles indicates 40 percent of businesses buying only in the UK have no information on second-tier suppliers. The report also reveals one in five UK companies hold absolutely no information about their tier-two suppliers across the world.

Mitigating supplier risk and being able to respond quickly when disaster strikes depends on having visibility of the supply base across all tiers. A prerequisite is to create a coordinated global supplier database, before moving on to build an accurate supply chain map detailing every supplier at every level.

All too often, companies rely on first-tier suppliers managing the lower tiers. The result? Buyers have no idea who those lower-tier suppliers are, and what measure of compliance they hold. This is not sustainable.

**3. Build a map.** The most effective way to gain visibility is to build a map. To do so requires a standardized approach to managing supplier information. With an accurate database, buyers can request information from everyone involved in their supply chain.

This works best when "cascading invitations" are sent down the supply chain. The buyer instigates the action by inviting its first-tier suppliers to join the mapping process. Tier-one suppliers pass the invite on to tier-twos and so on, right down the supply chain. The key to success is

automation—ensuring the party in the middle can link what they sell to whom, and details of what they buy link to the next person in the chain.

Mapping the supply chain allows the buyer to assess which supplier manufacturing sites are potentially exposed to risk, and helps address potential bottlenecks, reliance on single suppliers, and companies with long lead times.

**4. Motivate suppliers.** It is critical to success that buyers get suppliers' support in mapping the supply chain by clearly explaining the benefits. A major incentive for suppliers is that they will also be able to understand risk in their own supply chains and improve their own business resilience.

Initially, some suppliers may be reluctant to provide information, especially if they feel it is sensitive. So it is important to reassure suppliers that they can control who has access to their information, and can maintain commercial confidentiality.

**5. Work collaboratively.** Mapping a supply chain can be a complex, time-consuming, and labor-intensive activity, making it a tiresome exercise for any individual company working in isolation. Most industries share common suppliers, so what may be difficult for an individual organization to do becomes easier to achieve collectively. The most efficient and effective way to do it is by working within a collaborative community, where effort and cost are shared.

Collaborative communities that use a central source of verified supplier data provide a perfect environment in which to map out supply chains—making it simple for independent companies to cascade invitations. The supplier then determines what information to make visible to whom.

*—Luis Olivie, Global Business Development Director, Achilles*

## See Spot Market Run

*"I don't think I've ever seen this before, and I've been a transportation pricing analyst for decades."*

That's DAT Industry Pricing Analyst Mark Montague's assessment of the 2013 Christmas-week spike in spot market demand for vans, and overall solid year-end performance for flatbeds and reefers as well. Freight rates, which are usually strong in the second half of the year due to holiday seasonality, tapered off after Thanksgiving but remained high. Then, in the lead up to Christmas, the national average for vans hit $1.95 per mile, which caught observers by surprise.

Why the anomaly? Montague tells *Inbound Logistics* it was the creation of a perfect storm.

"The holdback following the government shutdown in October 2013, and concerns about how long it would last, was a contributing factor," he explains. "Coming out of that, contingency plans and fears were allayed, which released pent-up demand.

"At the same time, we had a good industrial background and a late Christmas push because of Thanksgiving's timing," Montague adds. "Winter weather also came into play."

Trade volume and spot market demand have been riding a steady pattern since June, instead of dropping off in the third quarter, adds Peggy Dorf, senior analyst for DAT, the Portland Ore.-based freight marketplace platform and information provider. "It stayed at a high plateau all the way through until December," she says.

Better-performing industrial and agricultural bases later in the year impacted capacity and pricing trends. Construction had a solid November, automotive has rebounded, railroads are moving record amounts of frac sand and stone, and grains have recovered substantially since 2012.

"We've seen stronger reefer numbers from a lot of markets such as Sioux Falls, S.D.; Omaha, Neb.; and Lubbock, Texas, which are known for meat production," Montague says. "There were late potatoes in the Red River Valley of North Dakota and Minnesota, as well as Center, Colo."

As companies saw positive signs during the last quarter of 2013, and with the threat of inflation in 2014, many began pre-buying inventory—which similarly affected freight activity. Recent DAT intelligence suggests capacity will remain tight and rates high moving into the new year.

Everyone was caught off guard. "I have a friend who manages inventory for a consumer goods packaging company. Business was soft and it was looking at layoffs in November," says Montague. "Next thing you know, business picked up, and it couldn't get enough product out the door.

"The conditions were there," he says. "It was a perfect combination of elements." ■

## The Big Data Dig

Mining data might turn into a bonanza for logistics service providers, according to a recent report by DHL. The information logistics companies collect to deliver product could enable them to become search engines.

DHL's *Big Data in Logistics* trend report focuses on three areas where logistics companies and other industries can apply data analysis: operational efficiency, customer experience, and new business models.

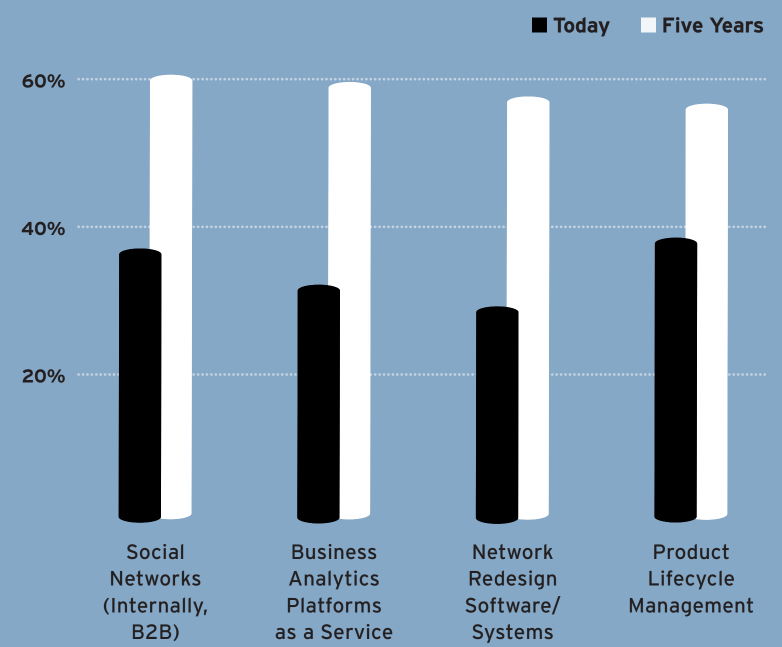
"Big data and logistics fit together perfectly," says Martin Wegner, vice president research and development, DHL Customer Solutions & Innovation. "Logistics companies manage a huge flow of goods, and thereby create massive volumes of data. Specific data about millions of deliveries – including destination, size, weight, and contents – is recorded every day.

"Data offers huge potential for new business models, among other things," he adds. "That allows logistics companies to become search engines for users from every conceivable field."

Before big data has a pervasive influence in the logistics industry, however, DHL cautions that some important issues – including data quality, privacy, and technical feasibility – must be addressed.

### CURRENT AND PLANNED INVESTMENT AREAS FOR BIG DATA TECHNOLOGIES

**Big data could become a game-changer for logistics. In a recent study on supply chain trends, 60 percent of respondents say they are planning to invest in big data analytics within the next five years.**




Source: *Trends and Strategies in Logistics and Supply Chain Management*, BVL International, 2013

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# According to the Kaiser Family Foundation, health premiums have increased more than 80% over the last decade.

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# GLOBAL

THE WORLD AT A GLANCE

by Joseph O'Reilly

Chinese demand for imports of Australian iron ore has the Baltic Dry Index ready to post its best quarter since 2011.

## Steely Optimism Grows for Dry-bulk Commodities Trade

If Chinese demand for Australian iron ore imports is any indication, the global commodities trade is on an upswing. The Baltic Dry Index — which tracks global freight rates for ships carrying dry-bulk commodities across more than 50 global maritime routes — is poised for its best quarter since 2011. Rising rates reflect a tightening supply and demand balance (similar to fleet utilization), while falling rates indicate the opposite.

Australia, the world's largest iron-ore exporter, raised its shipments of iron ore to leading global importer China by 19 percent in the first 10 months of 2013. The increase boosts trade because iron ore generates more demand than any other dry-bulk commodity, and it's happening while fleet expansion slows.

The threat of high inflation in China beyond central bank thresholds has been cause for concern, as it suggests possible market volatility. Steady rate growth — a reflection that demand is rising faster than supply — is a more positive indicator of longer-term stability, according to a recent report by investment research firm Market Realist.

Demand for steel will increase at a modest two to three percent in 2014 as China's government tolerates slower gross domestic product growth, and shifts economic drivers from infrastructure spending to domestic consumption, projects Moody's Investors Service.

Slower growth in China is part of the reason producer prices continue to fall year-over-year, adds Market Realist. Lower commodity prices also contribute to weak producer price inflation.

This is especially true for coal. Changing environmental standards, regulations, and the emergence of new energy sources have radically impacted global supply and demand. While Australia's iron ore industry has demonstrated growth, the same can't be said for coal miners.

A sobering trend continues to unfold: lower coal prices force producers to lift production in an attempt to lower costs, which, in turn, leads to even lower prices.

## World Cup Kick-starts Qatar DC Goals

Preparations for the 2022 FIFA World Cup in Qatar have exposed a fundamental problem for the oil-rich country—it lacks warehouse capacity, among other deficits.

The Ministry of Economy and Commerce, in collaboration with the Ministry of Development, Planning, and Statistics, is conducting a study to assess current and future warehousing requirements. As building activity picks up in preparation for the 2022 event, demand for affordable distribution space is increasing.

To fix the problem, the government plans to build a large number of warehouses across the country that will be rented out to businesses and development projects that demonstrate need.

The ministry is also exploring checks and balances to ensure development is equitable across all sectors. For example, a committee is being formed to monitor supplies and pricing of building materials. In a veiled warning, particularly to automobile dealers, the ministry will check if suppliers are taking undue advantages and abusing their dominant role in the local retail market.

Additionally, the study's scope will be extended to cover the after-sales services market. Databases will be created for poultry and dairy markets, including their sales, imports, and exports. The ministry also hinted that it was amending laws that regulate dealerships of foreign goods and services, commercial registration, and licensing.

## Supplier Risk Threatens Expansion

Nearly seven out of 10 business leaders believe supplier risk analysis will become more complex as they expand into new global markets, according to the Economist Intelligence Unit report *Strategies for Managing Customer and Supplier Risks*, sponsored by Dun & Bradstreet.

Adverse events associated with suppliers are becoming more frequent and severe, say 75 percent of the 395 respondents.

"Supplier risks are becoming more challenging because the supply chain is getting more complex," say half of those surveyed, while 36 percent agree that an increase in outsourcing essential functions is creating challenges in managing supplier risk.

More than half of those questioned say they collaborate with suppliers to improve performance in identifying and assessing risks. Fifty-three percent add that they use personal judgment.

When asked what strategies organizations rely on to control supplier risks, 38 percent say they closely monitor relationships with high-risk suppliers, 37 percent use contract language that controls risk, 35 percent limit the scope or scale of business with high-risk suppliers, and 30 percent maintain a blacklist of unacceptable suppliers.

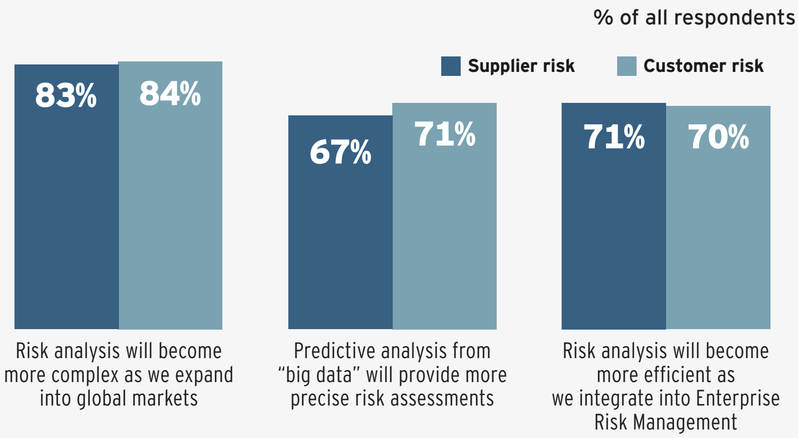
Companies that successfully manage risk use a variety of tools to handle specific threats, the study finds.

"Many organizations represented in the survey are on the verge of implementing more advanced analytics," the report states. "The majority say they are now using some analytical tools to navigate through risk data, and they recognize the need for more sophisticated tools to obtain actionable or predictive analytics."

Sixty percent of executives say they want to extract greater business value from risk data, but are uncertain about how advanced analytics can help.

The report also encourages companies to measure risk management, as only about half of respondents say their company tracks the outcomes of their mitigation efforts. About 85 percent of those who track outcomes are successful, compared with 51 percent of those that do not.

### Anticipated Changes in Supplier and Customer Risk Management Through 2018




Source: Economist Intelligence Unit survey, August 2013

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## Pakistan Protests Force Military Cargo Reroute

The U.S. Department of Defense's (DoD) drawdown of U.S. forces and materiel in Afghanistan has hit a costly hitch. Hundreds of shipments routed overland from the war zone via Pakistan have been delayed because of local protests against the CIA's drone program. Unless a peaceful resolution can be reached, the DoD faces the possibility of having to airlift equipment out of the region at an additional cost of $1 billion.

**Hundreds of trucks carrying military equipment are stalled in Afghanistan, as local protests delay moving the cargo via standard Pakistan routes.**

Pakistani officials have promised to take immediate action and quell the disruptions, but continuing security risks could force the issue. Flying military equipment out of Afghanistan to a port will cost five to seven times as much as it does to truck it through Pakistan. About 100 trucks are stacked up at the border, and hundreds more are loaded and stalled in compounds, waiting to leave Afghanistan.

The shipments consist largely of military equipment that is no longer needed now that the Afghan war is ending. Sending cargo through the normal Pakistan routes will cost about $5 billion through the end of 2014, according to the DoD. Flying heavy equipment, including armored vehicles, out of Afghanistan to ports in the Middle East, where it would be loaded onto ships, would cost about $6 billion.

A northern supply route, which runs through Uzbekistan and north to Russia, was used for about seven months in 2012 when Pakistan shut down the southern passages after U.S. airstrikes accidentally killed 24 Pakistani soldiers at two border posts. That northern route, however, was used primarily to bring shipments into Afghanistan, and is much longer, more costly, and often requires cargo to be transferred from trucks to rail.

## Asia Truck Restrictions Take a Toll

While a widely documented "regulatory war on trucking" continues to build in the United States, Asia is dealing with its own last-mile logistics challenges.

In China, high road tariffs and unregulated penalties are having an impact, accounting for one-third of total logistics costs—which approached 18 percent of gross domestic product in 2013, according to the China Federation of Logistics and Purchasing.

Approximately 95 percent of the mainland's highways, and 61 percent of its first-tier roads, require tolls. Trucks are also subject to other restrictions and penalties—for example, they can't use highways after midnight. Such a ban has left trucking companies with no other option than to break the law in order to guarantee timely delivery.

Exacerbating the problem, China's fractured transportation and logistics sector—which features more than 10,000 operators—is unable to take advantage of economies of scale and other collaborative opportunities. Trucking companies don't have enough network density to optimize moves, loads, and asset utilization. So capacity is wasted, leading to undue costs. Continuing e-commerce growth and last-mile delivery demands will only magnify these failures.

Elsewhere in Asia, Philippine truckers are facing similar restrictions that impede productivity. A modified truck ban in Manila from Dec. 13 to 20—which prevented overnight and early morning deliveries into the city because of holiday traffic—irked local trucking companies.

Restricting operators from roads will delay the delivery of goods to businesses and consumers, says the Confederation of Truckers Association of the Philippines. The ban, which impacted between 5,000 and 6,000 trucks, penalized 85 drivers during the first day of enforcement.

# The Migration of Africa's Piracy Problem

**Piracy incidents continue to threaten freight movements off the coast of Nigeria.**

Amid optimism surrounding Africa's rising economic star, piracy remains a concern for shippers transporting freight in and around the continent. From the Gulf of Aden to West Africa to the infamous Barbary Coast, hijackings have become an all-too-frequent occurrence—and a reminder of the corruptive influences hindering economic growth throughout Africa.

The tide may be shifting, however, according to a recent report by Control Risks, a London-based global risk and strategic consulting company. Maritime piracy by Somali gangs has reached a six-year low. The number of incidents between January and October 2013 was down 90 percent compared to the same period one year earlier.

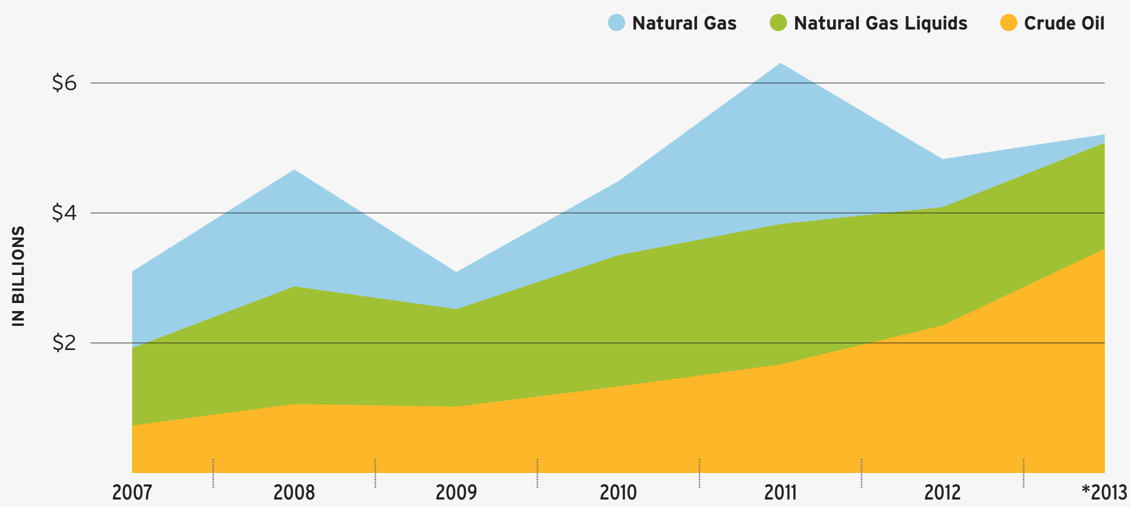
A few key factors support this reduction: Adherence to best management practices by crews and vessel operators, a significant naval presence offshore, and the continued use of armed security onboard vessels. "Additional onshore factors, such as the development of local security forces, have also played a part," according to the report.

Still, concerns are emerging elsewhere on the continent. West Africa has experienced a recent surge in piracy—and contrary to the Somali trade, bandits are after freight, rather than ransoms. A recent Reuters report documents that incidents off Nigeria's coast have spiked by one-third as vessels navigating the Gulf of Guinea, a major commodities route, come under siege.

The ongoing piracy problem is a sobering counterpoint to the positive economic

## U.S. Exports of Natural Gas and Crude Oil

U.S. fossil fuel exports are a hot topic in trade news. This graph shows the exponential growth of U.S. natural gas and crude oil exports since 2007. Liquid natural gas and crude oil exports made an especially huge jump in January through October 2013.




*2013 is Jan.-Oct.

Source: Zepol Corporation, www.zepol.com

vibe that has been building in parts of Africa. Government agencies that rely heavily on commercial maritime taxes are seeing revenues disappear as shippers seek more secure locations. The effect on trade is marked—as is the impact on socio-economic well-being.

## Trans-Pacific Partnership Hits Snag

The close of 2013 did not finalize a long-discussed free trade pact that would stretch from the Americas to Asia. Talks in Singapore between the United States and 11 other countries—including the host nation, Japan, Mexico, Chile, and Australia, among others—broke down before any agreement could be consummated.

The U.S.-led Trans-Pacific Partnership (TPP) is a major part of President Obama's foreign policy shift toward Asia. But consensus thus far has been hindered by disagreements regarding agricultural market access, environmental protections, and intellectual property concerns.

Progress was delayed when President Obama's Asia trip was postponed earlier in 2013 due to the U.S. government shutdown. The administration has already announced a rescheduled visit in April 2014.

The outlook, however, remains optimistic as the trade pact is expected to be finalized early in 2014. Negotiators are looking at reducing tariffs on goods and services, ensuring foreign companies operating in these markets share a level playing field with state-owned ones, and that patents are protected against counterfeiting. The bloc includes developing countries with large state-owned industries such as Vietnam and Malaysia, as well as wealthier nations including the United States and Japan.

There is some concern that the cost of medicine may rise in countries such as Vietnam because U.S. pharmaceutical companies are looking for longer periods

## Tesco Takes on Asia

London-based grocer Tesco is making a play to build its business in Southeast Asia by acquiring a minority stake in Lazada, an online retailer owned by German venture capital incubator Rocket Internet. The company sells non-food products including electronic goods, books, clothing, toys, and home goods. It maintains operations in Indonesia, Thailand, Vietnam, Malaysia, and the Philippines.

Tesco, which aims to strengthen its e-commerce capabilities while reining in spending on store expansion, has invested "tens of millions of pounds in the online marketplace," according to Robin Terrell, the company's multichannel director.

**Tesco operates only a few stores in China, but plans to grow its Asian business by investing in e-commerce capabilities.**

"We can do a number of things from a customer and product perspective, whether it's sourcing or supply chain management," Terrell explains, suggesting the possibility of cross-selling products—notably food—to a population of 600 million.

Lazada's business plan is ambitious; it wants to be Asia's answer to Amazon. Not to be outdone, Tesco intends to dominate the new multi-channel era—selling a range of goods from food to apparel, and banking products from its supermarkets and online, in lieu of cutting food prices to win market share as rivals such as Walmart's Asda have done.

Tesco already provides online shopping in most of its nine non-domestic markets, including Thailand and Malaysia. But greater competition is forcing it to differentiate by offering e-commerce capabilities in developing markets.

To that end, Lazada offers an eBay-like marketplace where third-party retailers can sell their services, which provides Tesco the chance to offer products in markets where it doesn't have stores or its own website.

The expectation and execution gap in Southeast Asia is still huge, which presents opportunities for new players such as Lazada and Tesco. E-commerce commands only a fraction of total retail sales. Apart from the geographical challenges of delivering to rural areas, credit card use in Southeast Asia is still relatively uncommon. Lazada serves the entire market with cash-on-delivery service.

Elsewhere, the grocer is also expanding into India, which is notable given the country's austere regulations on foreign investment. In fact, Tesco is the first global food retailer to receive approval since the Indian government decided to open up the supermarket sector last year. Tesco will launch a chain of supermarkets as part of a 50-50 partnership with India's Tata Group.

of patent protection, slowing the release of generic versions.

If completed, the TPP would encompass approximately one-third of world trade and 800 million people. And there's already chatter that other countries, notably China, have expressed interest in joining the partnership as well.

Any deal will have to be ratified by the U.S. Congress, where Democratic lawmakers, in particular, are calling for tough provisions on environmental and labor standards, and against currency manipulation. To simplify the process, the Obama administration wants to pass legislation that gives it authority to negotiate trade deals that Congress can accept or reject, but cannot change.

## China's Nicaragua Canal: Pipe Dream or Full Steam Ahead?

Leave it to China to steal the Panama Canal's centennial thunder. Rumors of a partnership with the Nicaraguan government, and plans for a competing canal connecting its Pacific and Atlantic coasts, are picking up steam.

Reports suggest the Sandinista government will give Chinese telecom tycoon Wang Jing concessions to create a canal three times the length of Panama's existing gateway. The deal would include stakes in proposed port operations, an airport, railroad, and other infrastructure developments. The price tag of the canal alone is estimated at close to $50 billion.

Under the terms of the deal, Nicaragua would receive $10 million every year for 10 years, as well as a gradually larger portion of canal ownership over the course of one century. After 100 years, Nicaragua would gain ownership of the canal. The payments would only occur, however, if the canal actually gets built.

China's Nicaraguan adventure is the latest example of its aggressive offshore infrastructure investment strategy – a lesson likely gleaned from its own dependence on Japanese ventures in the early 20th century.

China is paying the favor forward where it sees opportunities for even greater returns. Plans for a $10-billion port in Tanzania, and now a Nicaraguan Canal, would provide greater access to raw material sources, as well as control of global trade. Whether these ambitious proposals gain traction remains to be seen. As China proved with the Three Gorges Dam hydroelectric dam project, there are few limitations to what it can do.

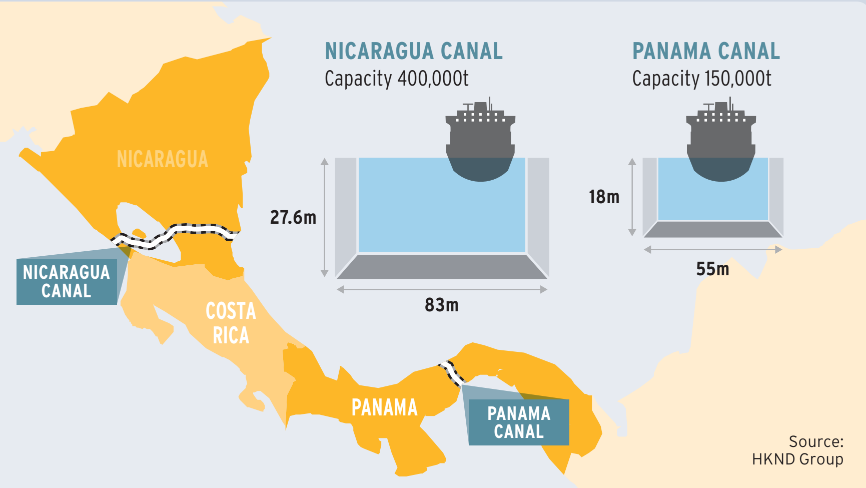
The dam incurred its share of environmental criticism – and the canal is likely to trigger even more, especially outside Asia's friendly confines. There's also speculation about whether there's even a viable business case for another canal in such close proximity to Panama. Some observers note that a Nicaraguan canal would need to produce $1 billion in annual revenue to break even. That means siphoning half of the Panama Canal's existing freight traffic.

Regardless, Nicaraguan President Daniel Ortega has given his imprimatur to Wang Jing's canal development company. In December 2013, Chinese workers arrived to conduct viability studies. Biologists from the National University and an English environmental consultancy joined them, according to the *International Business Times*.

Bluster or not, China gained everyone's attention. Maybe that's what the canal project is really all about.

### The Proposed Nicaragua Canal

Chinese billionaire Wang Jing plans to build a $50-billion canal in Nicaragua to rival the Panama Canal. The proposed waterway through Nicaragua would connect the Caribbean Sea and Atlantic Ocean with the Pacific Ocean.

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# Plan, Write, and Implement a Successful Software Project

Thankfully, most software projects succeed. Look around, virtually everything is running on software, and it all (pretty much) works. Maybe an out-of-the-box solution will work, or maybe you need to buy and modify that out-of-the-box software to suit your needs. Or maybe you will write your own. The worry, of course, is that software projects can fail.

How do successful projects differ from failures? How can you manage your software project for success? Here are some suggestions drawn from more than 20 years in the transportation software industry:

**Plan before programming:** Think things out before you start. What do you want the software to accomplish? What data is required? Where will it come from? What needs to happen first? Etc. Good software is the result of thousands of nitty-gritty decisions woven together. Analyze your workflow to anticipate as many of those decisions as possible. Some changes after you start are normal as opportunities or anomalies present themselves. Some will be small and easy to do. But some could strain your schedule and budget. Knowing exactly how you want the software to work before programming starts will help reduce the need for changes along the way. A great way to find out what you need is to design the reports you want first, then work your way back to make sure what you need is in the flow of the system.

**Consider software that you already like:** What are the best elements of that software? Is it an intuitive feel? A short learning curve? Reporting capability? Ease of integration? Scalability? Try to identify specific capabilities or traits that apply to your development project.

**Intelligently structure the project:** Have one person in charge. If a committee is required to make certain that various departments or functions are properly represented, select a single point person for programmers. That person should be able to make many decisions immediately – though obviously not all. Establish a realistic schedule before you start. Take into account vacations and holidays, especially in the summer and December.

**Select the right vendor:** Unless your project is entirely in-house, you'll be dealing with an outside vendor. Carefully check that vendor's references. Keep in mind that every vendor has at least one client who will tell you great things about him/her. You need more than that. Checking references is of paramount importance. Beyond that, be certain you have a match with whoever will be the point person on the vendor side. If it's a big project, you will be spending a lot of time with that person. Chemistry is important. Talk over the project from different points of view. Be as certain as you can that you're both talking about the same things, that you share an approach to the project, and that you're on the same wavelength.

**Start with Version 1.0:** Define your project's scope conservatively: There is a temptation to reach for the stars, to deal with more than the initial challenge. It's good to plan ahead, but the more you take on in a single project, the more complication you add, and the greater the risk of going over budget, missing deadlines, or even failure.

**Build in flexibility:** Missions change and so may your company's business processes. While you don't want to write a piece of software that attempts to do everything, what you do write should clearly reflect the basic business process it's being created for. If at all possible, it should allow for revisions to meet future needs. You can't anticipate all that the future might bring, but you can be aware of some possibilities, perhaps by following the media in your industry.

**Plan your rollout:** If at all possible, roll out your project one piece at a time. Enable people to learn the software in steps so they recognize benefits early in the process. That kind of acceptance makes adding features, options, and general complexity easier. Similarly, roll out to as small a group of people as possible to limit the impact of any day-one problems. You can more smoothly work out bugs if the entire business hasn't come to a halt.

**Programmers should talk with users:** Programmers who talk to end users will have a better understanding of what is expected of the software, what the outcomes should be, and what pitfalls in the process to avoid. Solicit suggestions from early users. Sometimes, simple tweaks or changes from early users can have an outsized impact.

**Define success:** The software you end up with may or may not please everyone. Perhaps management will be thrilled, but the staff will grumble. Maybe the customer experience will make Sales happy but Accounting will not like the reporting capabilities. Maybe it will boost your bottom line, maybe it won't. Whether or not your software project is a success will depend at least to a degree on your own definition of what that is.



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# Looking for One Logistics Partner That Does Everything with Excellence?

## An Enterprise Logistics Provider Delivers Holistic Solutions that Transform Your Business.

According to the *2014 18th Annual Third-Party Logistics Study* prepared by Dr. C. John Langley and Capgemini Consulting, global shippers are now seeking a more unified approach to outsourced logistics management. Fifty-six percent of shippers surveyed say they are narrowing their focus to work with fewer third-party logistics (3PL) providers.

Many shippers who realized initial savings using multiple niche providers now find fragmented vendor management to be counterproductive, complex and costly. To simplify these processes, reduce total cost of ownership and improve response time to rapid changes in supply and demand, more North American companies are looking for an Enterprise Logistics Provider. Capable of much more than a traditional 3PL, Enterprise Logistics Providers carry a best-in-class portfolio that improves every tactical and strategic business process from order to cash and vendor to customer.

An Enterprise Logistics Provider brings the benefits of Extended LEAN® principles to business performance, giving executives strategic management tools for continuous improvement across the entire supply chain. Enterprise Providers also leverage Extended LEAN to link supply chain value streams and create industry-wide value networks.

With a robust end-to-end service offering including domestic transportation sourcing in all modes, international logistics management, private fleet consulting, transportation management system (TMS) applications, warehouse sourcing, freight payment and audit, supply chain analytics, LEAN consulting, secondary packaging and more, an Enterprise Logistics Provider helps companies move products and information more fluidly to and through the supply chain. At first glance, the service offerings of third-party providers and Enterprise Providers appear similar, but the latter has many advantages that shippers should carefully consider when selecting a partner. An Enterprise Logistics Provider does the following:

- Takes an integrated approach to sourcing multiple modes of domestic and international transportation, ensuring smooth flow of raw materials and finished goods throughout the supply chain.
- Connects warehouse distribution points to the enterprise through integrated technology applications, giving production, customer service and finance a vehicle to improve inventory management and distribution.
- Offers technology that enables true enterprise asset management with a snapshot of all shipments from overseas ports to the customer's door through one interface.
- Meets shipper demand for complex business intelligence solutions by delivering data through multiple channels, whether static reporting or dynamic interactive web-based business portals providing mobile analytics.
- Enhances accounting efficiencies by coupling freight audit and payment services with innovative General Ledger (GL) coding automation and rigorous security safeguards to protect shipper interests.
- Positions itself to help companies begin or advance their LEAN journey by mapping their entire value streams and encouraging the implementation of LEAN processes on the production floor, in corporate offices and throughout the supply chain.
- Couples LEAN thinking with robust supply chain analytics capabilities to help companies continuously improve their demand response by determining optimal production and distribution locations.

An Enterprise Logistics Provider demonstrates world-class capabilities by developing value-rich, complete business solutions. The Enterprise Provider is elevated to business strategist by offering channels in technology, big data and supply chain analytics. Further, when operating under a non-invasive Co-managed Logistics® approach, an Enterprise Logistics Provider gives clients the best choices for optimization and empowers them to maintain as much – or as little – supply chain control as they desire. Shippers quickly realize the value of having one strategic partner with vast logistics expertise that allows them to focus on their core competencies. This synergistic relationship helps shippers achieve supply chain excellence, optimized business performance and enterprise value creation.

Transportation Insight's broad range of best-in-class services empowers over 400 North American companies, from mid-size to Fortune 500, to entrench themselves as market leaders. With more than 500 combined years of executive logistics experience, along with one of 200 Shingo Prize examiners worldwide, Transportation Insight leverages its Extended LEAN continuous improvement methodology to positively impact shippers from the C-suite to the loading dock and across the supply chain. Transportation Insight clients are not only surviving by keeping promises and improving profits, but also thriving by transforming themselves into powerful, streamlined enterprises.

**Transportation Insight delivers LEAN Enterprise Logistics solutions to North American manufacturers, distributors and retailers. Chris Baltz is Transportation Insight's President and CEO. Baltz has led the development of innovative supply chain solutions for more than 25 years. Please contact us at 877-226-9950 or visit www.transportationinsight.com.**

Logistics knowledgebase

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# PVMI: A New Approach to Supply Chain Control

Vendor Managed Inventory (VMI) solutions are focused on keeping inventory off the manufacturer's books until it is needed to fulfill customer orders. DB Schenker takes a broader view as part of a standardized solution called Production Vendor Managed Inventory (PVMI) – which enables the OEM to gain comprehensive supply chain control, something much more powerful than just minimizing inventory ownership.

In a traditional manufacturing model, the manufacturer orders and purchases the materials needed for production from the brand owners' (the Original Equipment Manufacturer or OEM) specified suppliers, and owns this inventory while it waits to be used for production. The material ownership and costs lie with the manufacturer prior to consumption.

A VMI model changes the point of material title transfer from the supplier to the manufacturer so that it happens only when materials are sent to the production line. The manufacturer pays for materials only as they are consumed rather than paying when they leave the supplier's origin, significantly reducing the manufacturer's inventory costs and associated liability.

While extremely beneficial, a VMI model can result in supply chain control issues surrounding inventory ownership, physical control, and visibility.

### DB Schenker's PVMI Solution

DB Schenker addresses these VMI model issues as part of its PVMI solution, which is designed specifically for inbound material in manufacturing supply chains. It provides a robust, state-of-the-art solution to OEMs and their manufacturing sites, while addressing suppliers' concerns that limit their willingness to participate in traditional VMI solutions. PVMI includes standardized business processes and IT solutions with an underlying IT structure to support both. PVMI enables comprehensive inbound material management: inbound transportation, receipt, putaway, storage, pull, pack, shipment, dray transportation, material management, inventory control, liability, warehousing, customs, contracts, supplier on-boarding, supplier management, customer support, non-standard services, and B2B messaging.

PVMI enhances traditional VMI solutions in a number of areas:

- **Supply Chain Control:** Traditional VMIs shift inventory ownership at the expense of OEM control. DB Schenker's PVMI solution accomplishes this change in inventory ownership, but increases OEM control over the supply chain. PVMI includes standardized solutions that enable the OEM to leverage the inbound material supply chain, even in the typical outsourced manufacturing environment. It does this by including solutions that cover inbound material visibility, on-hand material visibility, physical control of inventory by a trusted third party, and VMI postponement to minimize inventory at the manufacturing site. Partnering with DB Schenker and implementing PVMI enables the OEM to operate a Control Tower to optimize supply chain operations.

- **Visibility and Collaboration:** A critical first step to address the mismatch of actual inventory versus demand is a visibility solution. A key element of the PVMI solution is InView – a single, global, easily accessible and secure inventory visibility tool used by all parties involved in the supply chain. InView provides real-time visibility to all material, as well as all necessary details as to its exact status: when it was received, how long it has been on hand, exactly when it is pulled, historical pull (consumption data), etc.

This clear and consistent visibility allows all parties to understand material flow, and to collaborate on improved matching of supply to demand in real time, and, as a result, better meet the OEM's customers' orders. All parties rely on InView as the "source of truth" for determining available, known good, and ready-to-use inventory. The WebASN tool enhances PVMI's InView visibility solution to include inbound material. This extends the starting point for visibility to departure from the supplier's facility instead of receipt at the warehouse.

The DB Schenker InView and WebASN tools, combined with DB Schenker as a trusted third-party logistics provider, offers each OEM and supplier real-time visibility and physical inventory control in any DB Schenker PVMI warehouse globally. This combination enables and encourages collaboration between the OEM, the manufacturing sites, and the suppliers to align materials to where they can best be utilized.

- **Facilitating OEM and Supplier Engagement:** The unique characteristics of many specialized manufacturing supply chains (a large number of OEM customers, a large number of suppliers, and a relatively small number of outsourced manufacturing sites) lead to a large degree of similarity between various OEM supply chains. PVMI takes the similarities DB Schenker has seen in its 14-plus years of working with OEMs, and uses them as the basis for a standardized solution specifically designed to meet the requirements of OEMs without extensive customization. This allows easier implementation by new OEM customers, as standardization has enabled a PVMI eco-system to develop where suppliers and electronics manufacturers are already familiar with the solution.

PVMI also enables faster supplier engagement because suppliers only have to develop a single solution with DB Schenker that can be used for any manufacturer, manufacturer site, or OEM. More than 1,000 suppliers are already part of the PVMI eco-system.

**DB Schenker's dedicated PVMI Solutions team is available for immediate engagement. Contact Henry.Cone@dbschenker.com for more information.**



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# Transportation Planning – A Manual Headache Or an Optimized Dream

You can't optimize your transportation plans in your head, although many companies still think their planners should be able to. These companies are in serious danger of falling behind their competition as they continue to plan their transportation operations manually, often using an Excel spreadsheet and a map. With increasing customer demands for service, speed, competitive price, and pre-defined delivery slots, combined with escalating levels of aggressive competition, companies must turn away from manual route planning and embrace the range of solutions that can help revolutionize the route planning and optimization process at the level of sophistication and complexity required by today's transportation operators.

Many variables go into transportation planning; so much information is available and needed to make the best, optimized transportation decisions. With fluctuating gas prices, green initiatives, customer service requirements, driver shortages, and hours of service regulations, the need for optimized routing and scheduling is even greater than ever.

For every shipment there can be twenty or more variables and combinations of variables required to execute the shipment. Variables that need to be considered for optimized routing and scheduling include:

- Delivery time windows & dock restrictions
- Suitability of truck types, truck availability & maintenance schedules
- Traffic congestion and concerns
- Customer locations & delivery quantities
- Driver shift times & layover requirements
- Truck size and height restrictions
- Unloading/re-loading times
- Traffic speeds, temporary road work & road closures
- Number of people required to unload/load trucks
- Requirement to take away old products or packaging
- One-way streets and other street limitations
- Travel times and distances, meal & HOS breaks
- Categories of roads – urban, rural…and so on…

Taking account of all of these variables at the same time as delivering an optimized plan is a complex business and one that must challenge even the most experienced of transportation planners. In reality it takes a powerful optimization engine to create the best routes and schedules that make the most of your available transportation fleet while meeting customer delivery demands in a cost-effective way.

Paragon Software Systems provides optimized routing and scheduling solutions that utilize a highly developed algorithm designed specifically for optimizing road-based transportation operations. It uses digital mapping to calculate the most effective delivery and collection sequences with accurate journey times, allocating loads to appropriate trucks and drivers accordingly. This ensures that delivery schedules are geographically feasible, meet promised arrival time windows, while at the same time improving fleet utilization and productivity through optimized truck routes with minimal total mileage incurred and reduced empty running.

Paragon's standard route optimization software stores information about customer delivery requirements, truck fleets, required delivery windows, truck capacities, driver shift details and other transportation parameters and then calculates the best routes for trucks located at one central DC. Additional software options take automated planning one step further. For example:

- Paragon Multi Depot truck routing software also selects the best DC for each delivery as part of the route optimization process. This avoids situations where some DCs have spare truck capacity, while others have to hire extra carrier trucks.
- Paragon Integrated Fleets enables truck fleets at different DCs to interact - providing even more transportation efficiencies. This is suitable for more complex transportation operations, such as those involving multiple DCs with different product ranges at each, or where you want to combine pickups and deliveries on the same truck routes. This creates route schedules with efficient backhauls that reduce your empty mileage, improve productivity and reduce total transportation costs.

Without tools such as these you are heavily reliant on the knowledge and skills of individuals. What happens if your transportation planner retires and he holds all the specific information about each customer and their delivery variables in his head? Automating these processes means you don't have to rely on someone's memory or worry if they take a vacation, are absent from the office or they retire.

And it doesn't end there. In this context automation also means optimization. Companies using truck routing and scheduling systems can extract up to 15-20 percent savings or more from their transportation operations, which can amount to hundreds of thousands of dollars saved annually.



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# Know Thy Partner: Beyond C-TPAT

The globalization of supply chains has caused a major shift in trade partnerships. Partners are changing more rapidly than in years past. Relationships tend to be more focused on who can supply products cheaper, faster, at better quality, and U.S. companies are looking worldwide for competitive parts' sources.

With this new globally spread supply chain comes increased risks. Companies must be aware of both the partner and regions with which they are doing business. With more uncertainty and unpredictability, a focus on supporting growth and competitiveness, companies are increasingly realizing factors outside their direct control are having an impact on their supply chains.

Knowing your partners can help in maintaining a smooth flow of goods while ensuring safety and security. While initiatives such as Customs-Trade Partnership Against Terrorism (C-TPAT) are a starting point, companies need to look further to ensure greater seamlessness, security and success, through:

**1. C-TPAT Certification:** C-TPAT, launched in 2001, helps manage and monitor the movement of goods and reduce the possibilities of unknown elements accessing the shipper's containers and shipments. Through C-TPAT, companies have access to the most accurate information on their supply chain's security. C-TPAT requires examining all the possible ways a company moves goods, identifying countries and regions it is working with, and assessing the risk of each partner. It requires that manufacturers and partners demonstrate security criteria via written/electronic confirmation.

Though initially obtaining C-TPAT certification may require some investment, it can be a source of tremendous time and financial savings in the long run—from reducing the likelihood of audits and accompanying fines, and lowering scrutiny from the CBP, to reducing a company's liability and speeding up the time to get goods.

**2. Collaboration:** Practices and tools that encourage real-time collaboration with partners allow companies to conduct business more efficiently. Robust web-based software platforms allow partners to access and provide accurate information and timely responses to questions not only on C-TPAT partner questionnaires but also on country of origin, qualification and certification of parts eligible for trade agreements. Companies can automate processing purchase orders, Customs invoices, and shipping information (container numbers, bills of lading, etc) in one system. Partners/shippers can also provide and even upload supporting information on part attributes to increase accuracy in classification and avoid under- or over-paying duties and fees.

**3. Partnerships for Help:** In this new global economy, companies need to maintain due diligence and research partners as much as possible. Knowing how vulnerable they are and the threats of the region are critical. Organizations should research as much information as is available online, send questionnaires to prospective partners and even perform on-site evaluations, when possible. Importers, assuming the risk of transactions and products, have the right to require a certain level of cooperation from partners in sharing information and collaborating online.

**4. Better Internal Practices:** Corporate responsibility is becoming increasingly important for organizations wanting to build and maintain their brands. Customers may not want to do business with a brand that is not responsible. Increasingly corporations are also analyzing and auditing their own practices and evaluating themselves as a partner and supplier.

Knowledge is the key to success when it comes to working with partners. Keeping a step ahead of the shift in global supply chain and partnership management can help create a smoother flow of goods and avoid unnecessary fines and duties. It can also strengthen partnerships and the bottom line.

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# How to Deploy a Successful Improvement Program

Think the $30 million APL Logistics has saved through continuous improvement initiatives is unusual? Think again. According to the company's foremost Lean/Six Sigma/JDI professional, with the right resources and level of commitment, many companies can make these disciplines work equally well. Here, the company offers hints to help your organization deploy a successful improvement program – and shares candid advice about which options worked best for its own.

### Choose One Quality Discipline To Start With – And Focus On It First

When launching an improvement initiative, it's essential to be focused about the quality discipline you'll roll out first – because even though there are numerous viable options, it's nearly impossible to deploy them all successfully at once.

Your choices include:

- Lean
- Six Sigma
- JDI

APL Logistics' first discipline of choice was Lean. Like Six Sigma, it's highly quantitative. However, Lean's project timelines are shorter and its learning curve less steep. Ultimately this made it a better choice for getting operations trained, doing projects and generating positive results almost immediately.

### Choose And Deploy Your Preferred Training Model

Two of the most popular models include:

- Cultivating a small group of in-house experts whose acquaintance with your discipline of choice allows them to closely manage and lead every improvement project
- A grassroots approach that provides formal quality training for as many employees as possible and then relies on those employees to serve as project champions and trainers to other employees throughout the organization.

Both approaches can work. However APL Logistics elected to take the second, more viral route because it enabled more company employees to receive training and begin working on projects sooner. It also created a larger universe of qualified improvement advocates.

### Select The Members Of Your Project Teams

Avoid the temptation to stack every team with senior managers and longtime executives. Instead take an egalitarian approach that gives equal consideration to individuals such as:

- Truck drivers
- Pick-and-pack specialists
- Forklift operators
- Customer service representatives
- Shift supervisors

It's often these employees who wind up being the most valuable contributors, because they're the most acquainted with the day-to-day particulars of a process and therefore the most in tune with how it can be improved.

### Choose Your First Projects

Skepticism is a common hurdle in almost every quality program's infancy. There's no better way to silence it than by encouraging your teams to start with easy projects that can deliver tangible results right out of the gate.

That's the tack APL Logistics' program took during Year One of its continuous improvement initiative, when projects like the following were common:

- Changing out when incoming pallets were inspected
- Shifting the location of a facility's labor printer
- Launching a packaging recycling initiative

The savings on these simple projects weren't huge, especially when compared to the more complex projects that the company's teams handle now. However they remain some of the most significant, because they were the ones that provided the tangible proof of concept people needed to see early on.

### Continuously Improve Your Odds Of Program Success

Once your first improvement projects have begun generating results, it would be easy to assume that the hardest part of the journey is complete. But in reality, the work's just begun, because the possibility of hitting a future plateau is very real.

To ensure your program enjoys sustained momentum, you must constantly be on the lookout for ways like the following to keep things fresh and interesting:

- Adding new disciplines
- Helping teams exchange project details and ideas via web portal programs
- Adding financial incentives
- Expanding training options

**APL Logistics provides international, integrated supply chain services and innovative IT in 75 countries. It's a unit of Singapore-based Neptune Orient Lines (NOL), a global cargo transportation and logistics company. For more tips about continuous improvement or other supply chain efficiencies, contact the company at www.apllogistics.com.**

3PL LINE

BY KELLY CHRISTIE
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# Five Ways to Drive Efficiency In International Logistics

If your international supply chain partners aren't able to operate at optimal efficiency, they pass increased pricing on to your company. When partners don't meet your expectations, it's difficult to standardize the logistics flow, which reduces efficiency and decreases their level of commitment to your goals. Add the extra time your personnel spend working through the chaos to the costs of the resulting inventory sub-optimization, and you have the current state of international logistics management at most U.S. companies.

Inefficiency is amplified if your company is missing the following five components of complex international logistics operations:

**1. Strong partnerships.** International supply chain partners share a general lack of trust. Many companies have been burned in the past, and are unwilling to make a commitment to do anything out of the reactive norm.

Even if they do agree to work within a standardized, proactive model that provides communication and visibility, they likely will be unable to deliver on the commitment due to inefficient processes in other international logistics relationships. Building strong partnerships requires a serious effort to communicate and demonstrate your own level of commitment to achieving your vision.

**2. Standardization.** It is critical to establish standards for each supply chain partner. These standards not only benefit your company, but also drive the same consistent, reliable flow for each partner.

To establish trust within your supply chain, consider all parties involved. In a truckload shipment from the United States to Mexico, for example, the Mexican carrier must be confident that the shipper, U.S. carrier, Mexican customs broker, and border/drayage carrier are meeting their standards. When the Mexican carrier knows a trailer will arrive by a designated time, it can proactively allocate a tractor and a rested driver.

Now assume the Mexican carrier delivers and drops the trailer on time at the consignee in Mexico, and the consignee unloads the trailer within the standard. The carrier is able to proactively plan for pickup at the designated time, ensuring efficient equipment utilization.

**3. Visibility.** Sharing service standards builds a foundation for efficient, consistent, and reliable logistics flow. Full visibility for each partner in your supply chain enables efficiency. Workload imbalances are amplified in the international realm, but as your supply chain partners look upstream, each one is able to plan and allocate resources to assist overall efficiency, and ensure high service levels to your organization.

**4. Communication.** Factors affecting the standardized flow of a complex global supply chain – such as inclement weather or heightened border security – will always be present. Enabling proactive communication downstream allows each supply chain partner to take immediate action as needed.

**5. Controls.** The need for controls is amplified in the international realm. More parties are involved, creating greater complexity. There are also internal dynamics to consider within an organization. Lacking full alignment toward strategic goals results in higher direct costs, and can challenge the day-to-day flow of logistics operations.

Consider implementing a centralized decision-making process, proper organizational structure and division of responsibilities, internal audits, and a formal problem-solving process. ■

VIEWPOINT

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# Maximize Nearshoring Value to Minimize Supply Chain Complexity

Latin America—particularly Mexico—continues to gain favor as a sourcing hotspot. Its close proximity to the U.S. border has always been a draw, but recent developments have shifted the global trade landscape in favor of the Western hemisphere. Nearsourcing may never entirely replace production in Asia, but trading partners in the Americas should be an essential component of your organization's supply chain strategy.

Countries in Latin America have long offered low-cost advantages compared to the United States, but costs in Mexico remained higher than China, Vietnam, Pakistan, and Bangladesh. Recently, however, wage increases in China have made Latin America competitive again.

At the same time, a power shift has occurred, particularly in the consumer goods space. Consumer demand requires companies to generate and deliver products faster and more agilely. This pressure has played well into the nearshoring argument, as shaving weeks off cycle times makes a huge difference in today's fast and furious supply chains.

Another major storyline unfolding is China's rapidly growing middle class. As more people in China are buying cars, houses, clothing, and consumer electronics, the country's role as the "factory floor of the world" has pivoted.

The major demand for Chinese production is now coming from within, and this trend will only continue in the coming years. As this occurs, more materials and factory capacity in China will be booked for domestic production.

As a result, U.S. production is slowly shifting away from Asia, toward Mexico and other Latin American countries. In 2011, Mexico was the third-largest supplier of goods imported to the United States, with $269.2 billion worth of goods moving into the country – up 14.3 percent ($33 billion) from 2010, and 93.4 percent from 2000.

## Look Before You Leap

Shifting production closer to home may seem like a no-brainer, especially with so many benefits pointing in this direction. Hurdles and traps do exist, however. Companies should keep the following factors in mind when considering a nearshoring strategy:

- **Product and labor complexity.** Are you manufacturing t-shirts and jeans, or mobile phones and high-tech gadgets? Quality still trumps cost. Ensure the area you're considering offers the necessary resources and workforce capability.
- **Infrastructure.** Is infrastructure in place to meet your production demands? Inspect local access to roads, ports, and third-party services.
- **Capital and rates.** Do local suppliers have access to capital to fill orders? And what are the local rates being paid on capital? Areas of low-cost labor often face higher capital costs.
- **Political and social unrest.** Volatility in society or laws can have a direct impact on production and costs.
- **Local laws and customs.** Every country or region has its own set of unique twists. Know the local laws you must abide by before transacting there. For example, it may be mandatory practice to use a letter of credit to place an order with a local factory.
- **Technology and standards.** Is there access to technology to produce goods? Are tools and standards in place to ensure transparency during the production lifecycle? Are local workplace standards in line with your company's standards?

As manufacturing migrates toward

(continued on next page)

# [ VIEWPOINT ]

new hotspots such as Mexico, significant challenges remain.

### Developing a Game Plan

To meet these challenges, it is important to have a well-thought-out production strategy for managing the global supply chain.

Producing in Mexico may require a tightly orchestrated network approach. The country lacks some of China's resources, so it's up to manufacturers to string together and coordinate multiple parties in different time zones to produce goods on schedule.

Picture raw materials arriving from overseas, components made in different factories hundreds of miles apart, logistics providers moving goods to arrive on time at a separate facility for final assembly and preparation for delivery to a retailer in the United States.

A growing number of manufacturing, high-tech, apparel, and retail companies are applying this network approach to production as they add new sourcing locales such as Mexico to their supply chain portfolio. They're using cloud technology to connect all their trading partners in one place.

> Giving all supply chain parties access to a single platform from which to obtain the latest order data removes the guesswork.

A network approach changes the nature of the supply chain from uncertainty to clarity. Giving all parties access to a single platform from which to obtain the latest order data removes the guesswork. Similar to updates on social media channels such as LinkedIn and Facebook, supply chain partners can log into the tool, then post an update for their whole network to view.

Supply chain partners are using the same approach to manage complex workflows. As more production moves from China into Mexico, the winners of tomorrow will use cloud technology to operate a single supply network that smoothly orchestrates the movement of goods in the supply chain. ■

SMART MOVES

**BY MICHELLE BENJAMIN**
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# Creating Meaningful Logistics Training Programs on a Budget

Training costs are often among the first budget items to be reduced or eliminated. Smart companies, however, recognize the vital role logistics training plays in keeping their teams ahead of the competition, and choose to manage their training budget carefully.

To effectively manage training dollars, every department should distinguish between essential and recommended training. Essential training might include government-mandated certification courses that are required to satisfy regulatory compliance. Never eliminate these courses from your training budget.

Your list of recommended training courses, however, should consist of programs that enrich your team's logistics skillset, or support your company's growth in a new market or industry. These courses are critical to your company's success, but the cost should be tailored and monitored to meet your budgetary goals.

Keeping teams positioned for near- and long-term growth on a shoestring budget can be challenging. Here are four steps to help accomplish this feat.

**1. Look outside your organization.** Companies often try to create training programs using internal resources. While this may seem like a way to stretch dollars, it can have the opposite effect, especially if the internal team isn't knowledgeable about the subject. Looking to external sources for existing training programs is more cost-effective and time-efficient.

Reach out to local community colleges to see what courses they offer, or if they would be open to teaching the course on-site at your facility. These courses are often less expensive than taking the course through a dedicated training provider. Most community colleges also offer online training options, which allow for greater flexibility, resulting in higher participation.

Another possibility is contacting your peers at other organizations to share resources. Perhaps your company has a warehouse safety training program, but needs to schedule a course on workplace ethics. By reaching out to your network, you may find a company with a workplace ethics program in place that could benefit from your safety course. By trading programs, both companies benefit while spending little, if any, of their training budget.

**2. Identify the delivery method.** Course content drives the delivery method. For instance, forklift certification training needs to take place in person, following a pre-defined course schedule, with access to equipment, and an area to perform the required exercise. But anti-harassment training could be offered to employees via a variety of methods, from scheduled in-person classes to online courses.

**3. Schedule the course.** Consider the potential attendees, their work schedules, impact to the business if they are attending training, and time of year. Avoid scheduling training during seasonal spikes, or peak holiday and vacation times. Many logistics operations employ a two- or three-shift workforce. Include course times or online options that accommodate these workers.

**4. Request and act on feedback.** Distribute a course evaluation form after each class to solicit honest feedback from attendees. Consolidate the feedback, look for trends, and incorporate it into the next training plan.

An effective logistics training program doesn't have to break the bank. Be creative and think of alternative methods. By networking and offering options, you can ensure that your logistics workforce is trained, certified, and compliant. ■



BY CURTIS GREVE
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# Minimizing the Financial Impact of Peak Season Returns

As the supply chain world settles in for a long winter's nap, the reverse logistics world is shifting into overdrive to handle peak returns season. Both retailers and manufacturers report that the percent of returns for 2014 is roughly the same as it was by this point in 2013.

The rate of returns for holiday season purchases will likely equal approximately 8.1 percent of total retail sales. Two different streams of products flow through the reverse logistics pipeline in the first quarter, however. One stream is customer returns; the other is recalled or overstock product that did not sell, and must be cleared from the primary sales channel.

Early figures suggest the volume of recalled or overstock product for 2014 will be up slightly over 2013. Categories that experience deep discounting before the end of the holidays typically experience higher recall rates.

## Online Shoppers Boost Returns

A major challenge facing many retailers is how to deal with the growing number of Internet purchase returns. Many retailers see return rates rise dramatically as the percentage of Internet sales grows.

For many categories, the return rate for goods bought online can be three times higher than the same goods sold in brick-and-mortar stores. While this may seem excessively high, the reality is that—unlike in-store purchases—the majority of returned online purchases can be returned to stock.

The challenge is how to leverage reverse logistics capabilities when Internet order fulfillment centers are not located close to existing reverse logistics facilities.

## Taking a Smaller Hit

For many retailers and manufacturers, 40 to 60 percent of total returned volume is received and processed in the first quarter of the year. The goal of an effective reverse logistics process is to minimize the impact of processing these returns.

The first thing companies must do is provide the space and labor needed to keep up with the high inbound flow of goods. Timely processing of both defective returns and overstocks is key to maximizing the recovery rate on this inventory. Companies must provide additional space for processing and shipping the higher volume.

This may mean using excess space in a nearby warehouse, renting storage trailers, or taking a short-term lease on a separate facility. A common mistake is to focus on the extra expense, and not consider losses on recovery value.

## Streamlining Processes

The second step to minimize the impact of peak season returns is to manage processing and shipping. Simply taking a first-in/first-out approach can needlessly tie up space and capital. Management must review inbound inventories by manufacturer, and maintain a balance between freeing up space to process, shipping high-value inventory out of the facility, and avoiding excessive aging of the rest of the inventory.

Properly managing the sequence of what is sold on the secondary market and returned to an original equipment manufacturer can also have a significant impact on both recovery rates and processing costs.

The first quarter sets the tone for the year. Get your reverse logistics operations off to the right start and set yourself up for a profitable year. ■

# CARRIERS CORNER

**BY JETT McCANDLESS**
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# Brokers Are Commoditizing LTL Carriers... And That's a Good Thing

Much discussion in the transportation industry centers around how less-than-truckload (LTL) resellers, or brokers, are commoditizing the LTL carrier marketplace. While carriers don't claim that brokers are packaging up their contracts and listing them on the Chicago Board of Trade to be exchanged like pork belly futures contracts, some do believe resellers are stripping the value from their brand and lumping all carriers together on the same level to compete on price alone.

It is true that resellers have transformed the trucking industry by creating transparency through listing carrier rates and transit times for moving freight from, say, Atlanta to Des Moines. But will each carrier provide the same customer experience for that move at the same price? Not by a long shot. Their service levels are dramatically different.

## At Your Service

Three grades of LTL carriers are taking shape in the market: premium, standard, and economy. Nuances exist within these tiers, but in the past two decades, the lines have grown thicker as carriers—consciously or unconsciously—divide themselves across grades.

As users of LTL services, it is critical that shippers and brokers understand the differences among these carrier types. With a premium carrier, you will likely pay a bit more, but get a high on-time performance rate, clear shipment visibility in transit, and low claims ratio. If you're shipping a part that will shut down a plant if it doesn't arrive in two days, use a premium carrier every time.

But if you're moving low-value, dense freight that just has to get there in a reasonable length of time, why pay for the extras that would make it a premium service? Move it with an economy carrier and pay less.

■ **What this means for LTL carriers:** Create a reseller strategy and pricing program that accomplishes internal goals such as bringing on more tonnage or revenue, and correcting lane imbalances. Explain to the reseller when (and when not) to use your services, and what to expect when they tender a shipment to you. Don't try to be everything to everyone.

■ **What this means for LTL resellers:** Build your LTL network and understand each carrier's strengths and weaknesses. Spread that knowledge so the entire organization—from management to the customer service team and individual sales reps—understands it.

Don't be afraid to get creative with pricing. If a carrier takes the time to build a custom pricing tariff, signing up for it will have value, such as aggressive backhaul pricing, and avoiding tricky pickup or delivery areas that will create challenges for both brands. If costs are associated, you will make them back immediately by providing customers wit h value-added services and knowing how to utilize partner carriers correctly.

It is unlikely that LTL carriers will be completely commoditized, but premium, standard, and economy grades are becoming more relevant. This could be a negative development for some. LTL carriers that offer services outside their core competencies, and resellers who refuse to strategically engage LTL carrier partners, will be left behind as the market evolves.

But carriers and resellers that embrace change, and set up their businesses to operate in a marketplace where they can co-exist, can capitalize on this extraordinary opportunity. ■



BY SEBASTIAN VALENCIA
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# Supply Chain Analytics: Overcoming Obstacles to Stay Ahead of Your Competitors

Leveraging data analysis and technology integration can generate powerful insights to transform today's supply chains. Companies continue to struggle, however, with the best techniques to get the right information in the hands of their decision-makers.

Many manufacturers and shippers report their organization is not aligned around key performance metrics. Simply including analytics in your strategy does not guarantee that the right factors will ultimately be measured.

Here are a few obstacles that keep companies from benefitting from supply chain analytics:

■ **Effectively sharing data across the organization.** Recent investments to capture and store data have left many companies swimming in information. Most businesses do not operate a centralized analytics group to help drive strategy and execution, and are not leveraging analytics to guide functional processes throughout the enterprise. The first step is designing the right organization that can handle such transformation.

■ **Investing wisely in technology.** Many analytics efforts are geared toward real-time information, because most leading companies have already established a centralized data repository, capable of housing huge volumes of data inputs. Companies should be careful to balance IT-only investments with well-supported strategy, process, and organizational alignment efforts.

■ **Building the right team to support analytics.** Tenured employees with decades of experience and extensive knowledge of a company's business may lack the analytical mindset required to use advanced tools and muscle through extensive data. On the other hand, new hires bring the right analytical knowledge, but might lack the business and industry acumen to rapidly use their abilities. Evaluate opportunities to hire strategically, and leverage external partnerships to fill existing talent gaps.

## Strength in Numbers

Despite the challenges, leading organizations are embracing supply chain analytics for transportation mode selection, agile replenishment, product launch support, inventory allocation optimization, and strategic sourcing.

As a result, analytics is generating disruptive innovation within the supply chain. Companies must determine whether to redirect current investments in inventory. Traditionally, such buffers help offset lack of visibility and unpredictability within the supply chain.

Now, however, businesses are investing capital in data, talent, analytical models, and technology to increase overall visibility, letting them reduce inventory positions while increasing responsiveness. Leaders are able to distance themselves from the pack.

Thanks to analytics, fact-based, quantifiable trade-off decisions are powering the monthly sales and operations planning process. Not only that, but analytics is providing the ability to establish the correlation between disparate environmental conditions ranging from trade strategies and marketing campaigns all the way to consumer confidence and competitor actions.

The gap between leading and lagging companies will continue to widen as businesses get better at capturing, modeling, and analyzing data to derive powerful insights and make faster supply chain decisions. Lagging companies will be left further and further behind. Making smart use of supply chain analytics can help ensure your organization is not among them. ■

GREEN LANDSCAPE
Sustainability in the Supply Chain

**BY GARY HANIFAN**
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# Weathering Climate Change and Supply Chain Risk

Companies have become more aware than ever of the considerable risks that climate change poses to their businesses and supply chains. A current or future risk related to climate change was identified by 70 percent of the 2,500 companies responding to *Reducing Risk and Driving Business Value*, a 2012 survey conducted by the Carbon Disclosure Project (CDP) and Accenture.

These risks are defined as having the potential to significantly affect operations or revenue. More than half of the supply chain risks due to drought and precipitation extremes are already affecting respondents' operations, or are expected to have an effect within the next five years.

Other concerns include the potential for reducing or disrupting production capacity, reduced demand for goods, and even the inability to do business.

Many leading companies are taking innovative steps to address these risks from the perspective of supply chain sustainability. Some, for example, are optimizing carriers to ensure the most efficient methods of transporting goods.

Other companies are optimizing transport containers. One large oil and gas marketing company, for example, is using between 15 and 20 percent of raw materials containers arriving at its plant for loading end products and returning them to the seaport.

Some companies are using SmartWay carriers; one U.S. consumer products company routed more than 95 percent of truckload traffic in 2011 through SmartWay carriers, resulting in significant fuel savings.

Other levers for embedding sustainability in inbound logistics could include: increasing full-load shipments; reducing the number of trips; reducing empty truck returns; adopting cleaner transportation modes to reduce $CO_2$ emissions; and selecting in-region suppliers to reduce inbound distance.

Survey results also indicate that only 25 percent of respondents that cited water-related supply chain risks as a major concern have done the work to identify risks at the level of detail necessary to mitigate potential disruption.

Supplier awareness is an even greater concern. Nearly one in five respondents indicate that their suppliers are not aware of the water risks affecting operations. Another 38 percent say their suppliers are aware of, but not actively engaged in, addressing the challenge.

Too few discussions of supply chain risk management deal with reducing risk costs in a systematic, quantitative way. Companies can take four major steps to address this process:

**1. Review how data is collected and managed.** Companies collect data through scorecards, questionnaires, audits, and other methods. But survey results indicate that more work needs to be done to determine best practices for analyzing data, and using the results to improve both practices and processes.

Organizations still have much to do to turn data into information and knowledge they can use for better decision-making. Properly collected and organized data is the foundation for supply chain risk analytics that can point the way to effective action.

**2. Make governance more effective.** Many companies are improving collaboration among internal functions, with marketing, legal, and other teams now more involved in decision-making related to sustainability and climate change risk.

While procurement may continue to play a central role, companies could facilitate improved collaboration

(continued on next page)


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The Global SCM Leaders On-Demand Automotive Supply Chain Conference will bring together leaders, visionaries and practitioners from all sectors of the industry. This forum will enable sharing of the new paradigms as growth returns with executive speakers and break-outs spanning inbound parts, outbound finished vehicles and aftermarket.
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between the procurement team and other internal and external stakeholders to improve processes, and to ensure that risks related to climate and other possible disruptions are properly identified and factored in the way they define and manage processes.

**3. Improve collaboration with suppliers.** Ninety percent of CDP supply chain program members participating in the survey identify physical risks related to climate change, compared with only 45 percent of suppliers surveyed. Risk management can be built into supplier rewards and incentives, with reports on energy and climate risk management a requirement for reaching compensation goals.

Companies can also push suppliers to institute board-level management of climate change strategies, including disruption risk.

**4. Actively manage stakeholder relationships.** Investors—who are well aware of the wider impact of a company's supply chain sustainability on the environment—may punish companies that fail to address climate-related supply chain risks. Companies may wish to review and, if necessary, expand efforts to educate shareholders and other stakeholders about efforts to increase supply chain sustainability while protecting future operations and revenues.

The supply chain can play a key role in innovations such as low-carbon products, sustainability related services, better product and packaging design, and other developments that can help increase revenues, enhance reputations and, in many cases, command premium pricing. The growing awareness of supply chain risk caused by major weather events, water shortages, and other conditions can be expected to increase investment in broader emission-reduction initiatives.

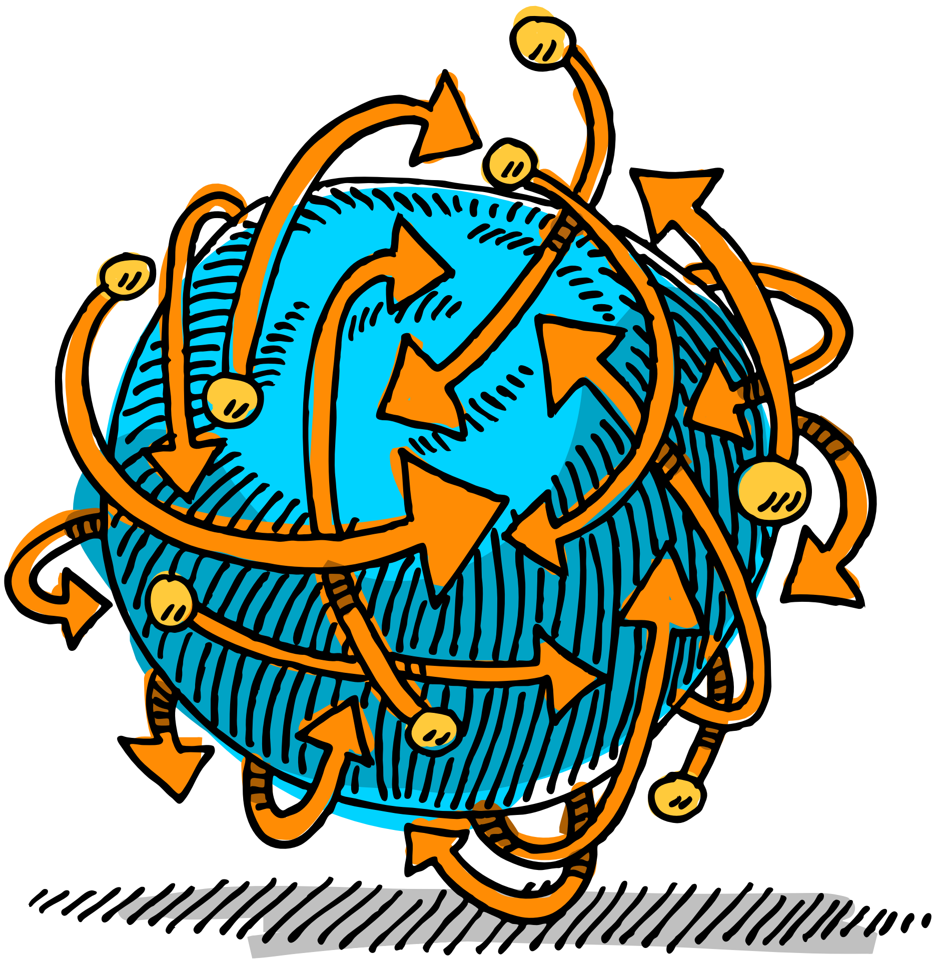
Companies that recognize supply chain risk presented by climate change may be more likely to look for innovative ways to reduce emissions and realize further cost savings.

The risks that climate change poses to business operations and continuity are real, and supply chain professionals play an important role in mitigating those risks. At the same time, however, improving supply chain sustainability, and protecting against risk, provide new ways to identify opportunities for revenue-generating innovations. ■

# 163 WAYS TO SUPERCHARGE YOUR SUPPLY CHAIN

**Supply chain gone stale? *Inbound Logistics* compiled these actionable tips to help revitalize your warehousing, 3PL, trucking, and global logistics operations.**

Illustrations: ©iStock.com/Frank Ramspott



# Global Logistics

Managing imports and exports, overseas manufacturing, and international shipping policies is complex, and involves details such as documentation, customs clearance, compliance, and regulations. These tips will help you operate a flawless global supply chain.

**1. Make help accessible 24/7.** Crossing borders may mean crossing time zones, and problems don't always occur during office hours. Have a staff member at your company ready 24/7 to deal with problems as they happen. A fast response can save you days.

**2. Learn the lingo.** FAST, C-TPAT, CSI – you almost need a PhD from MIT to understand government agency programs. Being patient and learning which programs suit your company and industry can go a long way toward speeding shipments and communicating clearly with transport providers.

**3. Collect data about your products.** Understanding product composition is vital to correct classification, which, in turn, drives many aspects of import/export compliance. Work with product managers, engineers, and scientists to understand the components and functions of the items you plan to import or export.

**4. Understand dual-use implications.** Look beyond the obvious uses of your product to anticipate any extra compliance responsibilities. Seemingly innocuous items could have potentially dangerous or nefarious dual uses, and require export licenses.

**5. Screen your trade partners.** Most countries maintain lists of individuals, businesses, and governments that are ineligible to participate in trade. It is your responsibility to ensure your trade partners don't appear on any of these lists.

**6. Understand total landed cost.** Understanding the true landed cost of your products—including duties, taxes, and other fees—informs your pricing strategy. Don't forget to factor in the cost of shipping, insurance, and payments to your logistics providers.

**7. Maintain comprehensive audit trails.** Mistakes happen, and even the most experienced global shippers may incur violations. Documenting actions, decisions, classifications, and filings go a long way toward mitigating potential fines and penalties.

## CUSTOMS

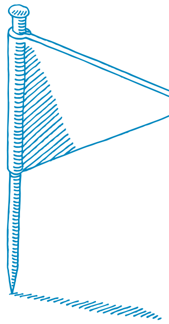
**8. Know your government agencies.** Some imports are subject to specific government agency requirements. In most countries, each agency establishes its own import regulations. In almost every case, customs will not release your shipment until you fulfill all government agency requirements. Make sure you submit that information with your customs entry.

**9. Provide correct information.** Get comfortable with global trade terminology and provide the correct information, including harmonized tariff numbers, export commodity control numbers, country of origin, Incoterms, and units of measure. Supplying your customs broker with correct data increases the likelihood of an accurate customs declaration.

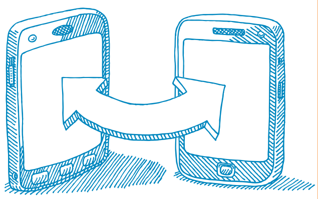
**10. Focus on what you can control.** When you ship globally, you can't control every link in the chain. So designate one person in-house to create your company's customs compliance procedures. Write them down and communicate them well. It's a big job, but failing to account for even small details can lead to delays and extra costs.

## DOCUMENTATION

**11. Know what documents each country requires.** Provide suppliers with a document guide based on each shipment's destination. Many order management systems allow suppliers to interface with their orders and print documents generated by your system. Leaving document preparation to your service providers increases costs and results in shipment delays.



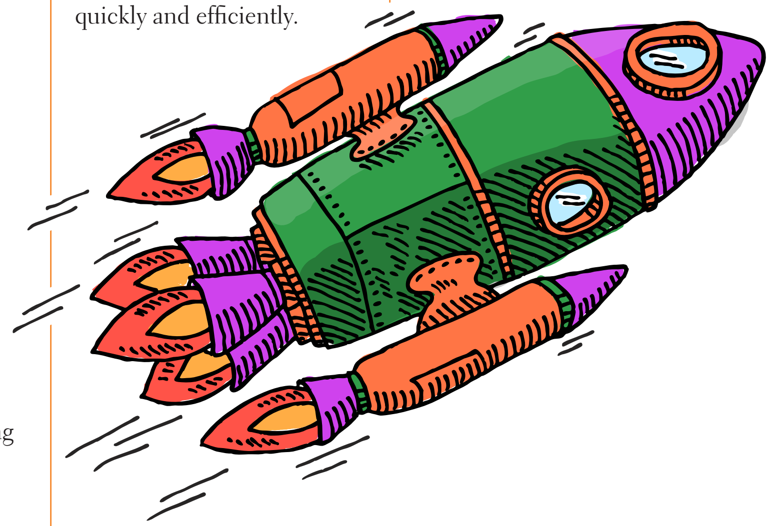
**12. Localize your documents.** Creating documents in the importing country's language significantly helps customs brokers and local customs authorities review and accept your paperwork. In addition to language translation, localization includes the use of local currency and units of measure. Localizing your documents also helps avoid transaction or currency errors.



**13. Use electronic communication.** Communicate your documents electronically over the Internet. This delivery method allows supply chain partners to integrate your documentation data with their systems, eliminating manual data entry errors and delays.

**14. Audit your documents.** Implement a program for routinely editing your customs brokers' entries. Make sure brokers are complying with your policies and accurately using your documents and their content. You can also measure cycle time to ensure brokers are processing your documents quickly and efficiently.

**15. Confirm document receipt.** Once you've created and communicated your documents, confirm their receipt so you can correct a missing document situation before an actual shipment is delayed.



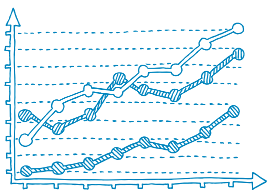
# Expedited Shipping

While expedited shipping can be expensive, it doesn't have to break the bank. With a little thought and planning, shippers can control the factors driving expedited shipping costs by following these tips.

**16. Hire the right people.** Employing a staff experienced in logistics management ensures that you can proficiently assess shipments to determine the most economical transportation mode. Your logistics team must be able to effortlessly evaluate a shipment and convert it to the most cost-effective – but expeditious – mode.

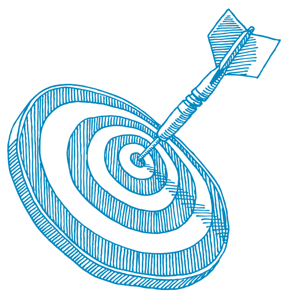
**17. Determine why you need to expedite.** Take a good look internally. Is the use of some expedited freight due to poor planning? If it is, work on improving the root cause of the problem.

**18. Reduce fulfillment time.** How quickly can your warehouse get a fresh order out the door? Can the process be improved? If you cut order-to-ship cycle time, you can reduce expedited freight costs.



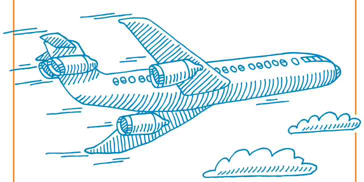
**19. Establish metrics.** Start measuring to start managing more effectively. If you've already established some metrics, make sure they're the right ones. If they're not, make changes.

**20. Share the metrics.** Make sure senior management understands how much money is spent on expedited transportation. Approach them with solutions. For example, "If we improve forecasting, we can cut transportation expenses in half."



**21. Improve sales forecasting.** Although you may not have a crystal ball that will predict sales demand with 100-percent accuracy, you can strive to get as close as possible and reduce the need for expedited freight.

**22. Eliminate padding.** Everyone along the logistics chain – from the person placing the order to the production team to the transportation manager – sometimes adds "safety" time to ensure on-time delivery. Pretty soon, a shipment that is required by 9 a.m. becomes required by 5 a.m. and needs a more expensive transportation mode. Stick to the original delivery time.

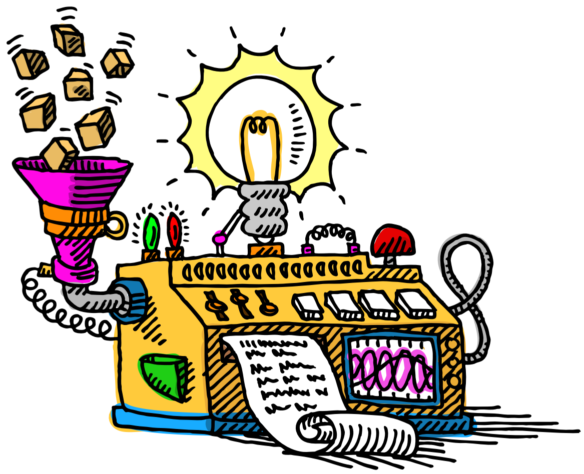


**23. Choose the right expedited mode.** Utilizing the wrong mode costs shippers the most when they make premium transportation decisions. Choosing air charter over exclusive-use trucks, or same-day air rather than next-day air, quickly increases unnecessary costs.

**24. Ask the right questions and provide accurate information.** Inaccurate information relating to shipment weight, dimensions, and timing can cost thousands of dollars. For example, a shipper might request a pickup of a six-piece shipment weighing 2,000 pounds, but when the van arrives the pieces are too long or too heavy to fit on a van, and a truck needs to be dispatched. Logistics specialists encounter these scenarios every day.


**25. Buy quality expedited services.** Failure to deliver on time is costly and can cause production stoppages, failed customer commitments, and lost business. Using a sub-standard or inconsistent carrier costs more in the long run.

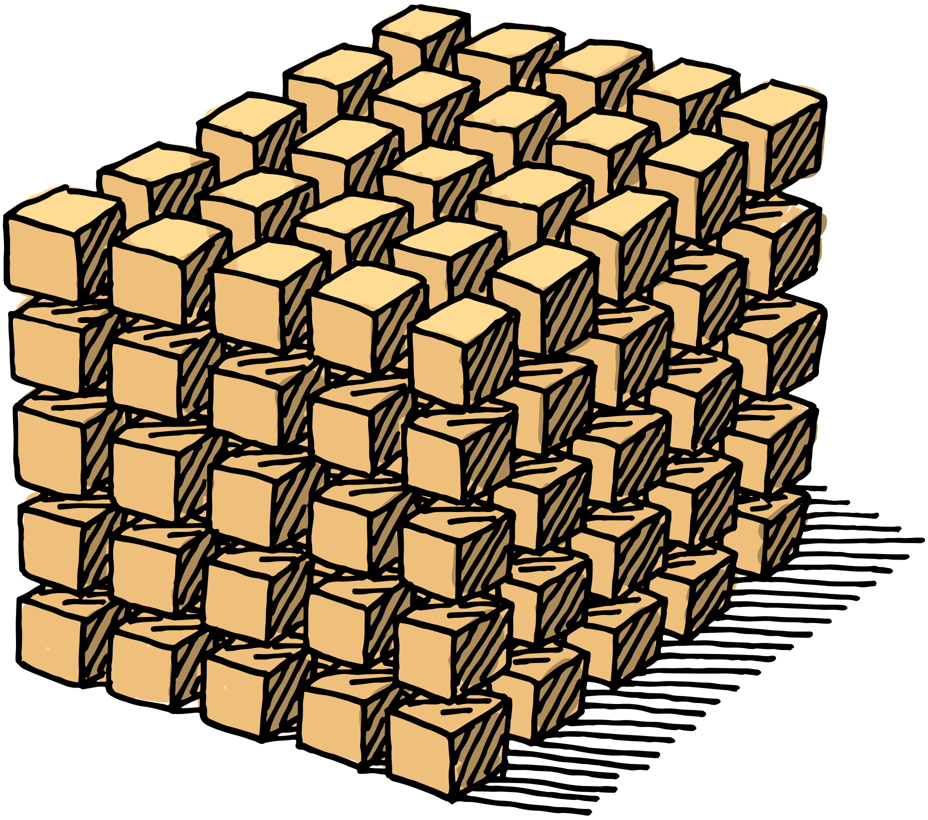
**26. Build a comprehensive coverage network.** Many expedited shipments originate outside common carrier lanes. When you get a call from a customer at 2 a.m. for a shipment originating in Smallest Town, U.S.A., be sure you have a plan of action to support that region.



**27. Let technology work for you.** Leveraging the right technology to manage shipments and link your customers allows you to easily access and implement best practices. Your technology platform should also offer your customers ease of use and configurable options. Harnessing a single control point will help you drive quality assurance and streamline your customers' entire supply chain process.

**28. Ensure visibility.** Do your customers have true door-to-door visibility of every shipment? To successfully manage expedited shipments, it is imperative that your system link shippers, suppliers, and carriers. Whether through the Web or some other platform, customers need to see where their freight is every step of the way.

**29. Operate 24/7/365.** Expedited shipments are often unpredictable, and they certainly don't keep bankers' hours. To provide customers with the level of visibility expedited shipments require, have a logistics specialist available at all times to identify and resolve any potential problems that may arise.



# Warehousing

Managing labor, technology, and equipment choices can make or break the success of your warehousing operations. These tips will help keep your facility running efficiently and effectively.

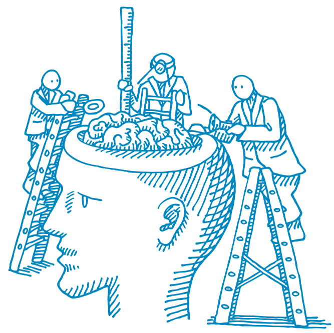
## OPTIMIZATION

**30. Analyze each operation and results.** Identify areas where your organization is slow. Physically watch the overall flow of a packing process, then a picking process. Are products organized properly? Twenty percent of the total products account for 80 percent of all picking activity. Make sure these products are in the most ergonomically sound locations, and are given ample storage space.

**31. Standardize your processes.** Reduce potential variation in areas such as unloading, accounts payable, shift scheduling, and facilities management. Standardization saves time and money, and reduces errors.

**32. Measure what matters.** Gather real-time operations intelligence on warehousing processes, and establish key performance indicators. To support continual warehouse process improvement, and ensure business goals are being met, collect and analyze real-time data from order fulfillment technology and materials handling equipment. Benchmarking performance and analyzing collected data can facilitate more informed decisions about how to respond to changing customer requirements and business goals. If an outcome is not important to customers and shareholders, don't waste time measuring it.

**33. Communicate effectively.** Clearly communicating to workers your organizational goals and the processes to achieve them is one key to effective warehousing operations. When managers fail to create an environment of open and clear communication, employee productivity suffers, resulting in high turnover and wasted resources.



**34. Offer robust training and reduce turnover.** Create training programs that incorporate cross-training. Break a job down and present the operation to new associates. Allow them to test their performance before releasing them to the process. This is more effective than the traditional sink-or-swim method. It costs money to train employees, so you want to keep the ones you have. That means you need to motivate employees to keep them satisfied. This can involve monetary incentives, employee recognition, or special perks for great performance. Employee retention leads to a reduction in costs associated with hiring replacement workers,

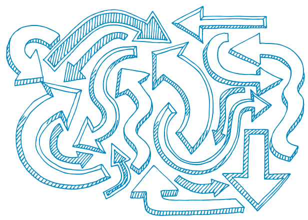
managing downtime for missing staff, or retraining warehouse employees.

**35. Minimize the number of touches.** Manual operations slow movement through the warehouse and can introduce errors. Automate picking, packing, and shipping processes to minimize the number of times humans touch products and orders.

**36. Offload some processes to a Warehouse Control System (WCS).** WCS solutions help manage materials handling equipment in real time, which will maximize system throughput and performance, and provide visibility to potential logjams.

**37. Gain end-to-end visibility throughout the facility and processes.** Eliminating silos in the warehouse—from the loading dock through delivery and transport operations—removes barriers to growth and innovation. In many organizations, supply chain executives and corporate operations plan independently, often negatively impacting corporate goals. Maximize profits and establish competitive advantage with cross-functional planning.

**38. Automate your paper-based and manual processes.** It may seem obvious, but many operations still use manual, paper-driven methods for putaway, picking, and gathering shipping information. Manual methods are time consuming and involve a higher risk of error. In addition, the data has to become electronic at some point in the process. Automated data-gathering extends the electronic environment out onto the warehouse floor, with information-gathering tools such as handheld scanners, bar-code readers, and other remote devices. These tools improve accuracy, make personnel more efficient, and help operations run smoothly.



**39. Use Lean tools, such as value stream mapping, to create a blueprint for improvement.** Value stream mapping is the process of establishing a clear picture of product and information flow. It depicts both current state and desired future state, in ways all team members can understand. The value stream map provides employees an overall view of all warehouse activities, allowing them to suggest improvements in other areas, as well as their own. Display the map in the warehouse so that employees are able to reference improvements and bring the next steps to life.

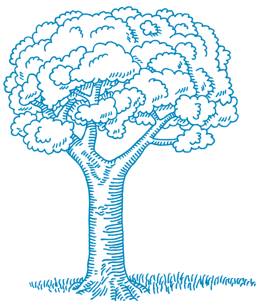
**40. Implement standardized work.** Developing detailed and illustrated standard operating procedures (SOPs) and standard work instructions (SWIs) for every job is a crucial step toward the quality goal of repeatable processes. With SOPs and SWIs in hand, new employees walk onto the floor with specific reference material to consult. This results in a shallower learning curve, and makes it easier for managers to monitor and assess performance.

**41. Build quality into processes.** Accurate quality measurement systems establish quantitative baselines and enable the organization to monitor the current status at all times. When a variance or mistake occurs, the team focuses on the process, not the person involved. Utilize a "Five Why's" investigation, where team members ask "why?" not once, but at least five times. For example, if a forklift knocks off a sprinkler head, you don't simply ask why it happened, but why the forklift was so high, why it was in that location, why the sprinkler head was placed there, and so on. Drilling down to root causes allows the team to collaboratively rebuild the process to prevent recurrence.

**42. Aim for a just-in-time (JIT) strategy.** Just-in-time warehouse management strives to eliminate the waiting, storing, and unnecessary movement of product, materials, or information. The goal is to establish as close to continuous flow as possible without constant movement and the need for intermediate steps. Stagnation in the movement of parts, people, process, or communication within the warehouse—for example, an email that sits in someone's in-box for three days—interrupts proper flow and can lead to process errors.

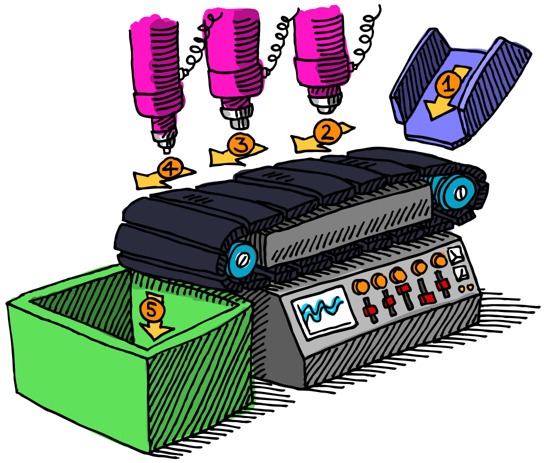
## EQUIPMENT

**43. Understand the differences between wood and plastic pallets.** Wood pallets are recyclable, can be repaired, are less costly, and can hold more weight than plastic. But they also give off moisture, splinter, harbor bugs, and contain fasteners that can damage products. Plastic pallets are durable, clean, bug-free, weather-resistant, and contain no fasteners. They also cost three times the price of wood, are not easily repaired, are not as stiff, and have fire safety ratings.



**44. Recognize the environmental impact of your pallets.** Plastic pallets have a longer shelf life and go back into the system, but if damaged they cannot be repaired; they are made from oil and must be melted down to be recycled. Wood pallets, however, are made from a sustainable natural resource and are easily repaired and recycled.

**45. Examine pallet trade-off costs.** If you move fragile products, weigh the cost trade-off. Is the cost of a pricier pallet higher than the cost of damaged products, shipment delays, and disgruntled customers?




**46. When choosing a materials handling system, consider the products you manufacture and/or warehouse.** Some solutions are more suitable than others for products requiring tight security, such as pharmaceuticals and biomedical shipments, or climate control, such as frozen goods; and uniform/stable loads that do not require frequent operator attention.

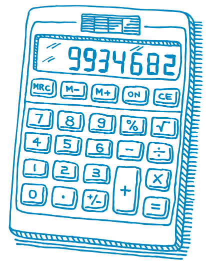
**47. When purchasing lift trucks, factor in total lifecycle costs.** Variable costs such as maintenance and repairs, energy or fuel, downtime, and rental costs to replace down trucks account for a large portion of total ownership costs.

**48. Choose a lift truck that is technology-enabled.** Look for compatibility with common wireless communication technologies, which allow you to collect real-time data from the truck.

**49. Select a lift truck with safety features.** Lift truck manufacturers continuously develop new technologies and ergonomic features to help reduce the likelihood of accidents and injuries. Look for trucks with features such as adjustable seats, rear assist grips with horn button, and tilting steering columns.

**50. Look for a lift truck dealer with ample support.** Make sure your dealer has enough technicians, parts inventory, and service vans available to service your trucks as quickly as possible, and factor the dealer's location into your purchase decision. Dealers should help you manage work orders, track repairs, and alert you to trucks that are overdue for general maintenance repairs. Also ask about aftermarket support, including warranty coverage, rental, fleet management, and complimentary products and services, such as battery fast-charging systems.

**51. Make lift truck ease of maintenance a priority.** Routine maintenance areas should be easily accessible, with features such as one-touch fuel tank brackets, no-tool floorboards that lift out quickly to expedite daily operator checks, and hydraulic filters located outside the hydraulic tank for easier service.




**52. Calculate your investment.** You can gain significant labor savings by implementing automated storage and retrieval systems, but a trained maintenance staff is required to manage these solutions. Determine return on investment by calculating what you can save on additional leased space compared to conventional storage methods.

**53. Consider total ROI.** Benefits of upgrading materials handling systems may include traceability, inventory control, and accuracy improvements; safer, gentler product handling; tighter security; and possible elimination of physical inventories.

**54. Think through your warehouse lighting scheme.** Increased accuracy, reduced rack damage, environmental benefits, and improved work environment are all factors to consider.

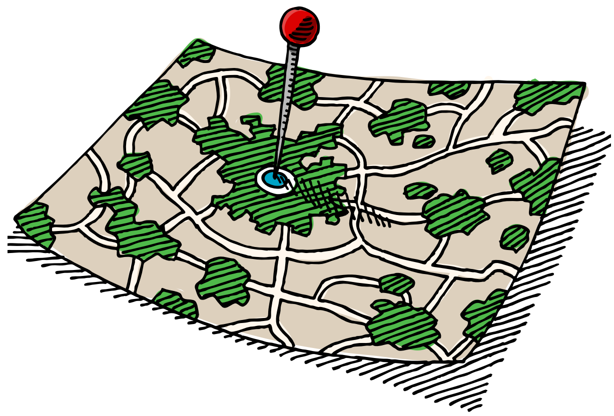
# Trucking

Multiple factors go into choosing the best less-than-truckload (LTL) and truckload carrier partners for your business. Here are some tips to keep you on the right road.

**55. When obtaining price quotes, accurate information is key.** When getting price quotes or bidding out future business, know how much weight you will be shipping and the number of pallets your product will move on. Having this information will save you money and help you stay one step ahead of your competition.

**56. Understand the pricing structure.** If price is your primary criteria for picking or evaluating carriers, then you must be aware of all factors affecting your net transportation cost. When reviewing each carrier's pricing, compare key factors such as tariff base rate, discounts, and applicable or waived accessorial charges. Using carriers who allow you to base all pricing on a single or common rate structure may create some benefits, such as one basis for carrier pricing comparison, simplified audit technology/automation, a benchmark for negotiating and compliance, and control over cost variations when general rate increases occur.

**57. Carefully select RFP questions and set reasonable deadlines.** Shippers structure a successful RFP when they align themselves with carriers that fit their shipping profile. Shippers should collect information on carriers' financial performance, customer service, IT quality and capabilities, exact fleet size, type of equipment used, and CSA scores. Carriers need a clear review period and realistic deadlines to assess their own capabilities, post questions, and provide detailed, effective RFP responses. Snap decisions can be costly to all parties.



**58. Ship out of areas close to major cities.** Metropolitan areas such as Chicago, Los Angeles, and Philadelphia have a substantial concentration of LTL trucking firms and terminals. Generally, the farther you are from urban areas, the more expensive your freight charges will be. The likelihood that your freight will be delayed also increases.

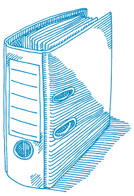
**59. Consolidate orders.** If you know you will have multiple orders going to the same location, try shipping them at the same time. Brokers can pass savings on to their customers when they ship multiple orders to the same general location, even if you cannot put them on one bill of lading (BOL). Standard common carriers sometimes bill customers on each BOL even if the freight is destined for the same place.

**60. Be flexible on transit time.** The more time you can give a carrier to move your product, the more money you'll save.

**61. Evaluate flexibility.** Transit times are important, but a carrier's ability to accommodate change is also essential. If you require late pickups or early delivery times, find out if the potential carrier can accommodate those requests. It also helps to prepare a list of questions about flexibility, such as: Can the trucker's workforce handle extraordinary requests? Can the carrier quickly assign staff and equipment to handle additional capacity?

**62. Know the carriers and agents who are handling your shipments.** Most LTL carriers do not serve the entire country. They "service" those areas outside the range of their own equipment by securing agents based in those areas. Make sure you know these agents and they know you. If your LTL carrier uses multiple terminals, get contact information and names of those people who are accountable at each facility.

**63. Re-evaluate your dock procedures.** Get your freight ready prior to the driver's arrival, and devote one or more dock doors to LTL pickups and deliveries. Coordinate a pickup system with your LTL provider to eliminate delays. LTL carriers assign multiple pickups to each driver, and sometimes instruct drivers to leave after 15 to 20 minutes with or without your freight. An efficient loading system means both parties come out ahead.



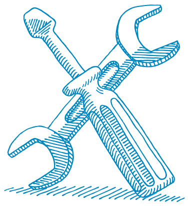
**64. Supply well-written, universally adopted corporate routing guides.** Routing guides optimize freight lanes and remove excess shipping costs. Best practices mean incorporating electronic shipment-level detail from all carriers and routing guide rules into a central database; treating the guide as a company-wide shipping mandate; employing weekly or daily shipment data imports; and cross-referencing shipment data against routing guide rules for reporting.

**65. Agree on criteria for performance evaluation.** Create a methodology and metrics explicitly stating your expectations, measuring effective carrier performance, and alerting both carriers and shippers if carriers are underperforming. Require your carriers to provide a monthly on-time service performance report. Ask that the report be segregated by lanes or states to identify problem areas.

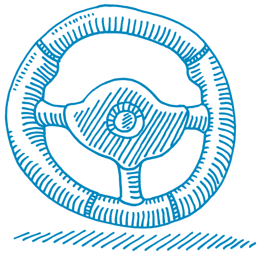
**66. Create a system for claims reporting.** Do your carriers provide a monthly claims report to determine the number of claims filed and the amount of time claims stay open before resolution? Ask carriers for an exceptions report to measure the exceptions ratio against total shipments tendered.

**67. Evaluate carrier service areas.** Do your carriers have service centers in the primary states where your customers or vendors are located? Direct line movement of your goods by a single-line carrier eliminates handling, which reduces the claims risk and protects your pricing. Also consider standard service days. Ask each carrier's account representative for a service standards matrix or map, and use it to compare service commitments.

**68. Understand carrier auditing processes.** Auditing carrier invoices should be an ongoing process to ensure compliance to contracted pricing. Do the invoices match the contract and contain all the required data for processing by accounts payable? Many carriers have extensive weight and inspection staffs who reweigh shipments or look for improperly classified freight. While most of these revised charges are valid, some weight and inspection staffs can be overzealous and overlook contracted pricing, which creates unnecessary balance-due billing.

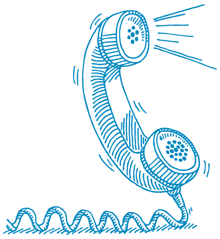


**69. Demand equipment maintenance.** Know if the trailers are clean and have been swept out before arriving to deliver or pick up your freight. Does the trailer have drainage to protect your freight from water damage? Is your freight picked up on a linehaul trailer and loaded to ride to destination, or is it transferred to another trailer before departing your local service center? Freight that is loaded to ride will require less handling, reducing the claims risk.

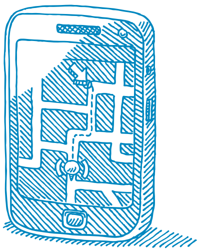


**70. Monitor driver performance.** Observe or consult with your dock personnel to learn if drivers use proper freight handling techniques. Do they have the right equipment to handle your freight? Do they throw your freight? Properly use a hand truck? Brace or stack your freight on the trailer? In addition, determine if drivers arrive on time for appointments or miss pickups. Are drivers courteous, treating your employees like they appreciate them as a customer? Many service center managers tell drivers that the customer is paying their wages.

**71. When choosing a regional carrier, look for competitive transit times.** Compare each carrier's service maps to see how many of your shipments they can deliver via next-day and second-day service. If, for example, the majority of your shipments move from Denver to the West Coast, determine what percentage of those shipments will be delivered overnight. Also check to see what lane improvements each carrier has in the works. Choose a carrier that can speed your delivery cycle as much as possible—and will stand behind its service commitment by offering a money-back guarantee.



**72. Make sure customer service options are a priority.** Ideally, carriers should offer more than one way for you to reach their customer service agents. Look for a carrier that offers several methods to contact its customer service department—through Web chats and text messages, for example. In addition, find out if the LTL carrier offers specially trained customer service agents who can answer questions about international shipping or special services you might require, such as distribution, consolidation, and truckload shipments.



**73. Explore real-time technology.** Real-time data is essential. Make sure the carrier you select offers real-time tracking technology and can provide shipment notification. Ask carriers to outline the technology they employ for every facet of their operation—from the dock to dispatch operations to drivers. In addition, find out how quickly they make pickup and delivery information available for each shipment.

# 3PLs

Companies of all sizes increasingly rely on third-party logistics (3PL) providers to manage logistics, transportation, and supply chain functions, access capacity, and tap technology capabilities. Here are some factors to consider when choosing a 3PL, expanding the value proposition, and growing the relationship.

**74. Be selective when sending out 3PL RFPs.** If you send out RFPs in a cattle call, your candidates may not participate or respond with their "A" game. Nor will your internal team be able to dedicate the proper time to evaluating each response.

**75. Ask what the 3PL does best.** Like most companies, many 3PLs excel in certain niches, such as global logistics, transportation, or warehousing. Most service providers started off focusing on one function, then added others along the way. Ask 3PLs about their mode and lane strengths. Depending on office and yard locations, a 3PL can likely guarantee capacity in some areas of the country, while offering substantially lower rates. This knowledge will help you better match your transportation needs to the right 3PL.

**76. Focus on operational excellence instead of the procurement process.** When companies put out 3PL bids, they often focus time and attention on the bid itself, instead of assessing whether a new logistics service provider can perform to the level of operational excellence they need. Shippers should consider what the optimal scenario looks like once the implementation is complete, and how they can work with their 3PL partner to improve upon it.

**77. Include your performance objectives in the RFP.** Solicit input from all the key players in your supply chain about the performance, pricing, and productivity levels they hope to achieve through outsourcing.

**78. Ask better RFP questions.** Don't ask the same old tired RFP questions. Weed out the weak ones, refine the keepers, and add some new ones to inspire insightful answers. Two suggestions: "Share a situation with a client that didn't go as well as you'd hoped and explain how you worked through it" and "Show us a process map of how you'd fulfill a typical order for one of your current clients."

# Few Things in Life Withstand the Test of Time,

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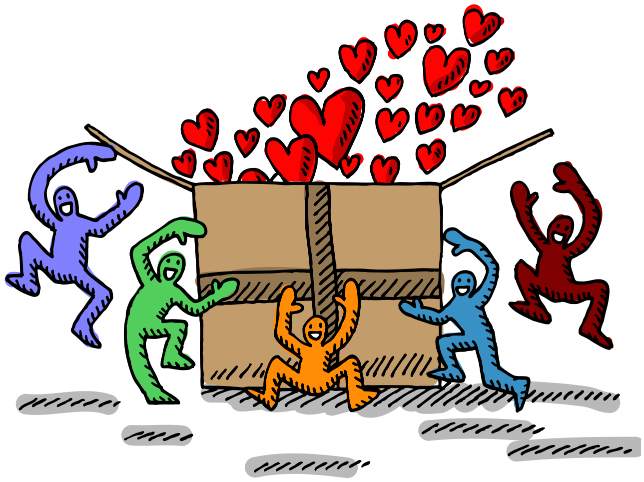


**79. Value corporate compatibility.** Finding a 3PL whose corporate values and philosophies are compatible with yours is essential. Build specific questions into your RFP to get to the heart of this issue.

**80. Don't believe everything you read.** An RFP is just one step toward finding the 3PL that's right for your company. Make every effort to conduct at least one thorough site visit and have some face time to make sure the 3PL hype lives up to the reality.

**81. To foster long-term partnerships with 3PLs, be honest.** When shippers enter a partnership, they should be willing and able to admit their shortcomings. Whether it's acknowledging pain points and limitations, or recognizing that bid data may be inaccurate, being upfront with service providers from the beginning is an important step toward building a collaborative relationship. Conversely, 3PLs should be equally candid about their capabilities. Such reciprocity builds trust.

**82. Conduct a thorough review of the 3PL's financial history and outlook.** Check credit report and bank references, certificates of insurance, vendor ratings for payment history, and financial rating with an independent firm such as Moody's Investors Service. Also review the 3PL's customer base for diversity and stability, private funding for impact on available cash, outstanding liens or claims, acquisition costs, or any factors that could overextend financial resources.

**83. Recognize what's in and out of scope.** Many procurement-driven companies will push for more from their service providers. The danger of scope creep is that it can slowly erode the relationship. With the understanding that customers have leverage, 3PLs may build walls and become less willing to give more when customers are taking instead of asking. On the other hand, shippers that recognize when they are asking for out-of-scope solutions, and acknowledge it upfront, are likely to find 3PLs more amenable to helping out and investing in the relationship.

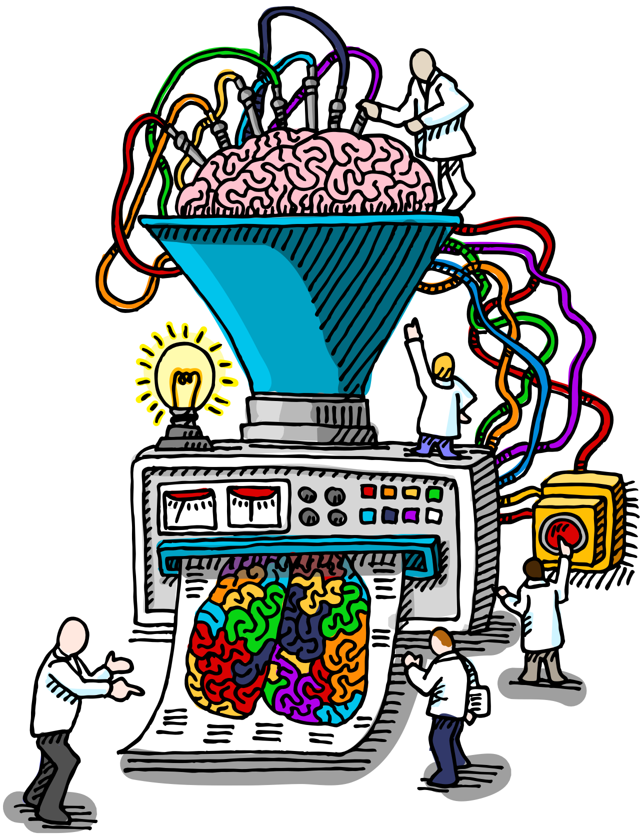
**84. Consider claims handling.** Most 3PLs don't like to admit it, but accidents do happen—so make sure you're working with a 3PL who has your best interests in mind. A good 3PL can help facilitate a claim, and act as a liaison between you and the carrier on your behalf. Some 3PLs carry insurance so if the carrier defaults on a claim, the 3PL will step in and cover the cost of the claim—but this is not standard practice.

**85. Make sure your 3PL has the legal authority to provide the services it is offering.** Federal law requires any company arranging motor carrier transportation for compensation to either have a property broker license from the Federal Motor Carrier Safety Administration and a surety bond, or be registered with that agency as a domestic freight forwarder. This rule applies to warehousing companies and motor carriers that broker shipments to other carriers when short on equipment. If a claim or accident occurs, don't assume the insurance covering their business assets will cover a brokered shipment.

**86. Ask your 3PL how it qualifies carriers.** 3PLs utilize other companies' assets to serve you, and you entrust them to select the appropriate carriers to move your freight. At a minimum, they should verify operating authority and insurance, and assess each carrier's safety rating. What process do they have to prevent unscrupulous carriers from re-brokering your freight without consent? Make sure they execute a written contract with each carrier that includes clauses to protect you.

**87. Execute the correct type of 3PL contract.** Many shippers mistakenly use a motor carrier contract with 3PLs. Unfortunately, these contracts include many clauses that are not enforceable with 3PLs, and omit key protections. If you use 3PL services from asset-based providers, make sure your contract with them includes specific language addressing those services. Don't assume your relationship with the asset side of their business is covered in your contract.

**88. Use 3PLs for more than just a back-up plan.** Being choosy about 3PLs is wise, but don't treat them only as a back-up plan for a last-minute load that needs covering. A common misconception is that 3PLs can always move a load at the last second. While 3PLs can often find the capacity needed in a pinch, it's not a guarantee, and you could be missing out on many benefits 3PLs can offer if you only use them this way.



**89. Find out what technology tools the 3PL offers that could help you work smarter, faster, and more efficiently.** Information is a 3PL's greatest asset, and many invest heavily in IT systems designed to streamline information flow and access. Most 3PLs offer online tools ranging from full logistics management outsource platforms to standalone tools for rating, optimization, tracing, and document retrieval. If you have special needs, some will customize an application for you. Choosing the right 3PL can save you costly IT investments of your own.

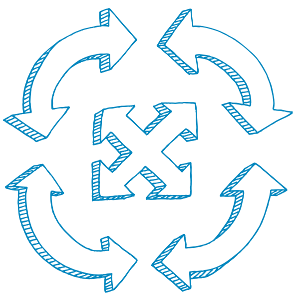
**90. Use your 3PLs as solutions providers.** One great thing about 3PLs is that you can use them as much or as little as you want. Use them as you would an asset-based carrier to handle only specific lanes, or treat them as an extension of your supply chain. Many 3PLs can operate as an outsourced traffic department, and can manage as much or as little of the shipping process as you need.

# Supply Chain Optimization

Superior supply chain operations are about tending to the details, ensuring continuous improvement, and adapting to change—whether that means boosting inventory accuracy, establishing leaner processes, or managing seasonal peaks. Fine-tune your supply chain with these tips.

## INVENTORY ACCURACY

**91. Pick a quality program and stick with it.** Companies can choose from a variety of inventory quality programs such as ISO, lean manufacturing, Six Sigma, kaizen, and Total Quality Management. Make sure everyone in the company supports the program and uses it.

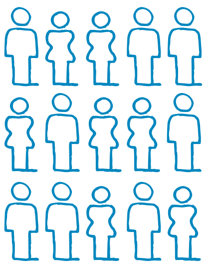


**92. Examine your entire supply chain.** Create and measure a "perfect order" metric from point of origin to final destination. This allows you to track inventory performance across your entire network and improve accuracy throughout the supply chain. Duplicate these successes and share improvement strategies so all areas of the organization can benefit. Also, hone your forecasting skills and help business partners, vendors, and customers do so as well.

**93. Know what you are up against.** What is your current inventory accuracy rate? You can't improve what you don't know. Once you establish a benchmark, set an improvement goal—aim either for a specific percentage or dollar figure. Check your results often to ensure you achieve and sustain improvements.

**94. Establish product traceability during the distribution lifecycle.** Include your entire inventory pipeline—inbound and outbound shipments as well as inventory in the DC. Never move product unless the action is authorized and recorded.

**95. Implement a continuous cycle-counting program.** Using cycle counting to maintain high levels of accuracy is one of the best ways to identify problem areas. An effective cycle-counting program eliminates the need for physical inventory expenses.



**96. Build a well-trained workforce.** If employees understand the company's inventory goals, they will help accomplish them by performing processes accurately and consistently.

**97. Choose supply chain partners who offer systems that interface with your inventory system.** Many inventory issues stem from data and transmission failures. Working with capable supply chain partners and using compatible systems helps improve end-user delivery accuracy and customer service.

**98. Make inventory accuracy everyone's job.** All employees throughout the organization own inventory accuracy. Every business unit within the company should understand how it impacts that accuracy. Many companies overlook the simple truth: managing inventory effectively is a key to business success.

## LEAN LOGISTICS

**99. Make your supply chain more compact.** Optimize the flow of goods and information through the supply chain. Implement plant and warehouse layouts and designs that streamline inbound and outbound flows.

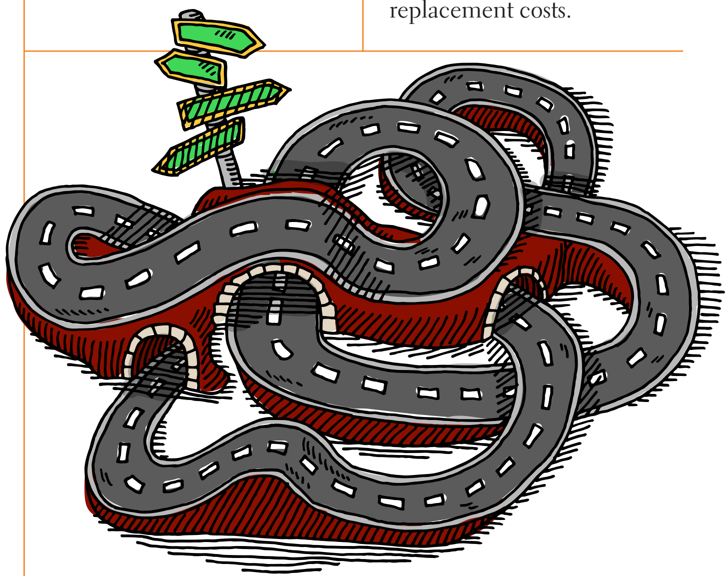
**100. Reduce stock at point-of-use.** To support a flexible production schedule, keep a variety of part numbers on hand in the warehouse. By executing Lean logistics techniques such as sequencing and sub-assembly, you can avoid large inventory stocks and their associated costs.

**101. Balance the receipt and delivery of goods.** Matching the incoming and outgoing flow of material to customer demands minimizes the amount of material stored in the supply chain, resulting in lower costs.

**102. Optimize delivery.** Avoid unnecessary replenishment through the use of Kanban and other pull systems. These systems result in replenishment based on consumption, keeping inventory lean.

**103. Balance the work so your cycle time hits close to Takt Time.** Every task performed by an operator needs to fall close to Takt Time—the pace of production in each process that is necessary to satisfy customer demand. This scheduling will help ensure minimal waiting time and maximum productivity.

**104. Reduce capital expenditures by closely managing your empty container flow.** The reverse logistics process of handling empty containers can be complex, so it needs to be well-managed to guarantee reliable supply and the lowest level of damage. At the same time, a well-managed empty container flow can significantly reduce maintenance and container replacement costs.



**105. Optimize transportation routes.** Employ recognized transportation best practices to improve the efficiency of moving goods off the production line and into delivery. By applying concepts such as segregating flows into small and large lots, direct dock-to-line feeding, and combining cycles (one full against one empty), you can avoid wasteful internal transportation processes and optimize available resources.

**106. Standardize warehouse processes.** Implement stable and repeatable processes, and standardize the time it takes to perform tasks such as picking, packing, and putaway. Standardization helps the warehouse interface more accurately and efficiently with operations outside the four walls, such as transportation.

**107. Use visual management aids for information flow.** Visual aids are an important part of tracking the physical flow of materials in a plant or warehouse. If everyone on the shop floor can "see" the current production status, they can more easily react to peaks and valleys.


**108. End and correct line stoppages.** Stopping the production line is costly and often unnecessary. When a problem arises, don't let it go and plan to fix it later. Stop and correct the problem now. You might temporarily slow productivity, but in the long run, recurring problems should end.

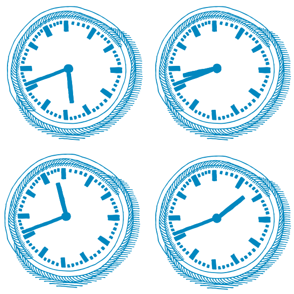
## SEASONAL PEAKS

**109. Redefine your facility boundaries.** It's not unusual to exceed a facility's standard capacity during peak season. Take stock both inside and out to determine areas you could temporarily repurpose for product storage. Queue up trailers and use your secure truck yard for overflow space, or temporarily use some aisle space to process products.

**110. Streamline space via a 5S, Lean, or other quality initiative.** Continuous improvement tools aren't just for eliminating waste in business processes. If your company has a Lean team, tackle a detailed space utilization project several months before peak season. This could significantly minimize or eliminate the need for overflow space.


**111. Verify and clarify your seasonal labor needs with staffing providers.** Whether you use one temporary staffing firm or many, don't assume they will provide all the personnel you need when you need them. Confirm your anticipated requirements and iron out the particulars of your working arrangement in advance.

**112. Initiate abbreviated training programs.** Well-established, quick-hit training can rapidly acquaint short-term personnel with your facility's most important safety, layout, and process flow information.

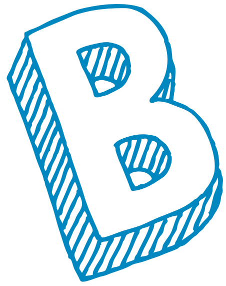


**113. Revisit shift structure.** Maximize your facility's labor capacity by adding extra shifts to each day, tacking an extra day or two onto the work week, or increasing shift lengths.

**114. Divide and conquer.** For maximum efficiency and minimum stress, leave complex and essential warehousing tasks to your long-term personnel. Use temporary workers for assignments that are simple and/or confined to a small area, such as labeling items.

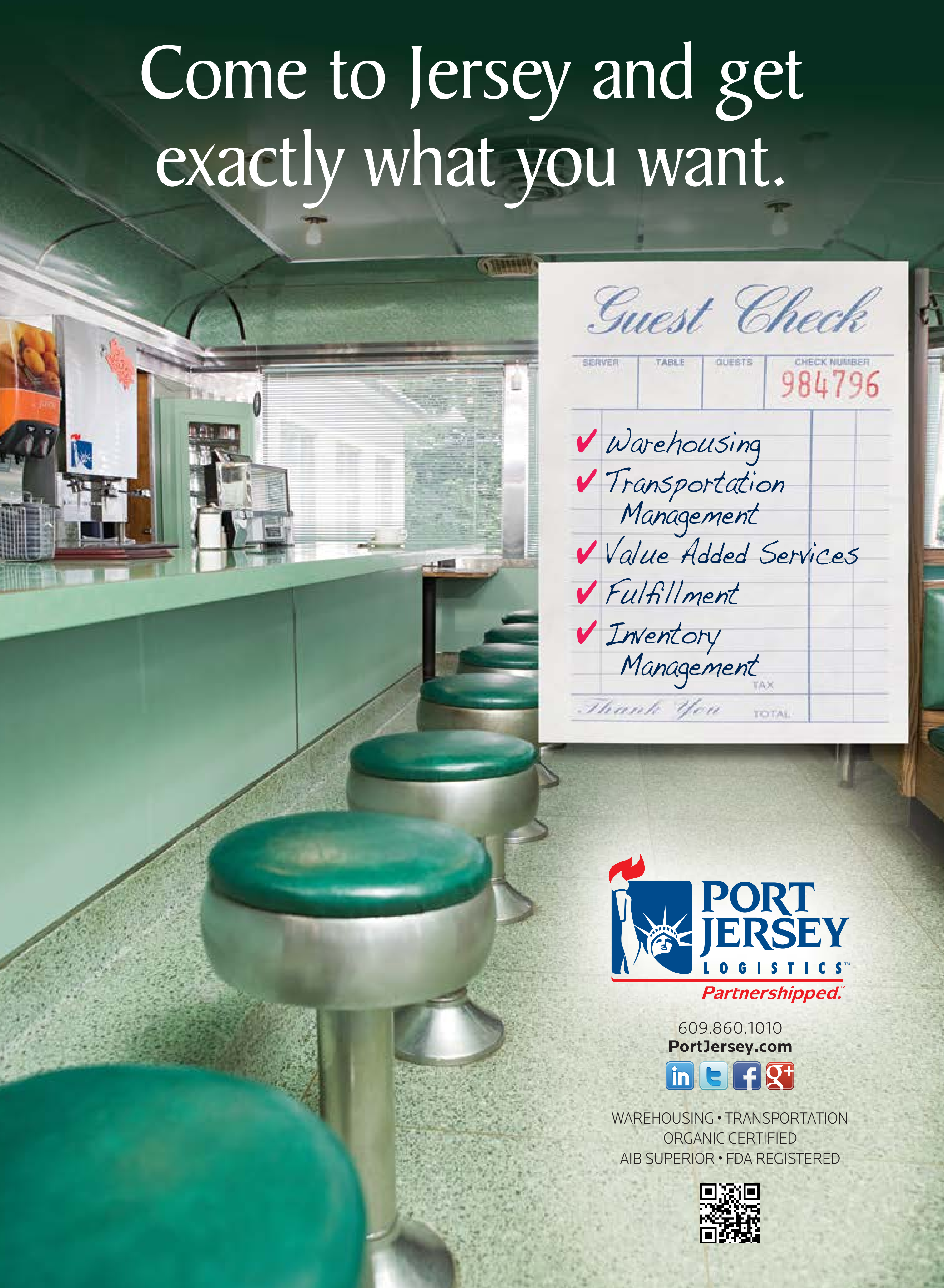
**115. Tune up equipment.** Before the peak season, assess the working condition of every significant piece of equipment at your facility. Repair, recharge, and purchase spare parts as necessary. Perform a gap analysis to determine whether you'll need to buy or lease additional items to handle the volumes expected.

**116. Consider crossdocking or deconsolidation.** Establish crossdocking within your facility so you can unload, stage, and reload hot products without having to wait for receiving and putaway. Or work with a deconsolidation center near your port of entry so certain products can go directly to their final destinations instead of spending time moving to and from your facility.




**117. Get to know Plan B carriers.** During seasonal down time, ship some items via Plan B carriers to test them in case your preferred carriers are unavailable during peak season.

**118. Refresh your knowledge about expedited transportation options.** Inventory emergencies or lapses tend to occur during the peak season. Avoid disruptions by learning your expedited service options, such as time-definite ocean transportation, air-sea, sea-air, and team-driver trucking services. Explore these options now, so you can deploy them when activity heats up.



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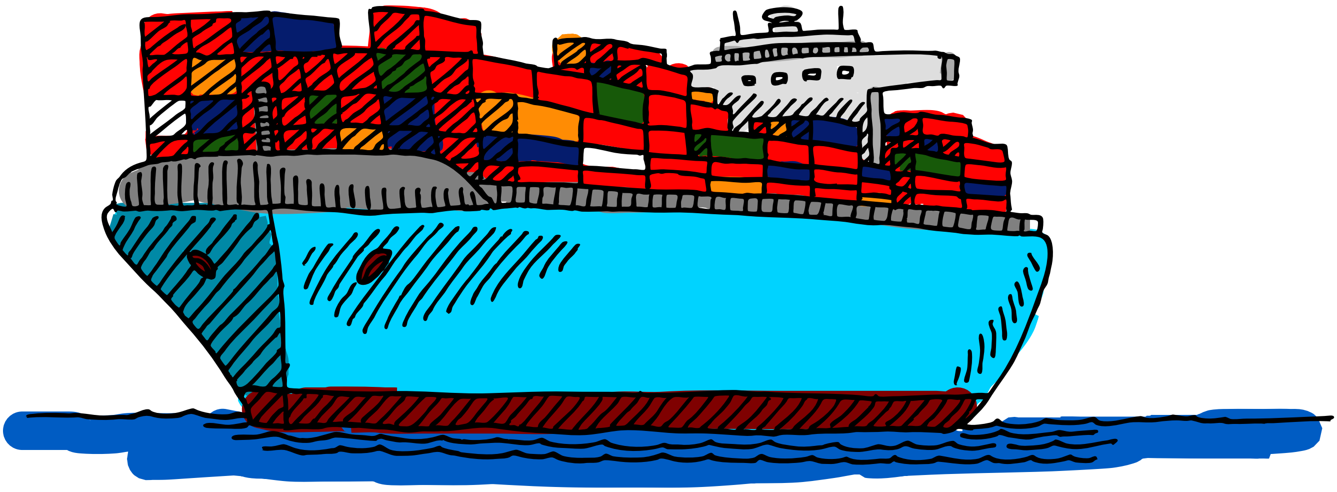


# Maritime

The best way to maximize ocean freight efficiencies is effective planning. Use these tips to get a clear understanding of your shipments' scope, frequency, and quantity. Then cement relationships with carriers to better plan your containers, and take advantage of the intermodal connections, capacity, and distribution facilities at ports around the country vying to be shippers' first choice.

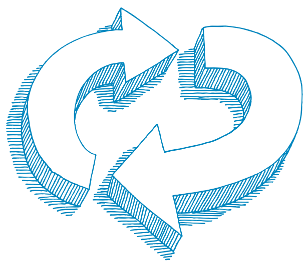
**119. Minimize less-than-containerload (LCL) and 20-foot container use.** Costs decrease drastically when you use larger equipment.

**120. Consolidate LCL freight to full 40-foot and high-cube containers.** When multiple shippers send freight to the same destination, combining the shipments can create savings.

**121. Bypass U.S. distribution centers.** Ship directly to stores instead. When buying from several vendors in Asia, for example, don't ship the containers to a U.S. distribution center to be stored as inventory until orders are picked and packed. Avoid warehousing and DC costs by consolidating shipments in Asia with other shippers, then delivering directly to retail outlets.

**122. Transload operations to inland U.S. destinations.** Once shipments arrive in the United States, send them to a transload facility to be repacked and loaded on trucks for delivery to inland destinations. This helps reduce costs and expedite shipments.

**123. Forecast to the volumes by lane for your carrier base.** Forecasting starts at a high level, usually annually, but should be fine-tuned to a monthly or weekly forecast so carriers can update their allocation models. Providing lane and equipment information helps carriers align on a finite level and builds your credibility and reliability.



**124. Make round-trip opportunities available.** Balance is key to maximizing efficiency. Providing inbound and outbound flows from a location allows carriers to make optimal use of equipment. If a carrier has to reposition empty equipment back to its destination, it could lose revenue. Providing round-trip opportunities is a strategic way to increase efficiency.

**125. Know the market.** Assess current market prices, fuel costs, capacity, and demand. Your company will achieve best pricing by setting reasonable targets. Plenty of data is available to help build your knowledge of how the market is moving.

## PORT SELECTION

**126. Evaluate your transportation needs.** How do you ship your product? Do you use rail, road, water, air, or a combination? See if the ports are well-connected to these transportation modes. For instance, consider how far the port is from the airport or railway. Align your needs with the port's location.

**127. Consider proximity.** You can cut transportation costs by using a port located near your trading partners. Also be sure there are warehouse, distribution, and transload facilities nearby that can accommodate your containers and other cargo loads.

**128. Evaluate the port's investment in its infrastructure.** The port should be taking steps such as enhancing its navigation channel access, reducing landside congestion, expanding terminal capacity, and working on better intermodal options for improved goods movement. It should also have a plan for handling periodic increased ocean and intermodal volume.

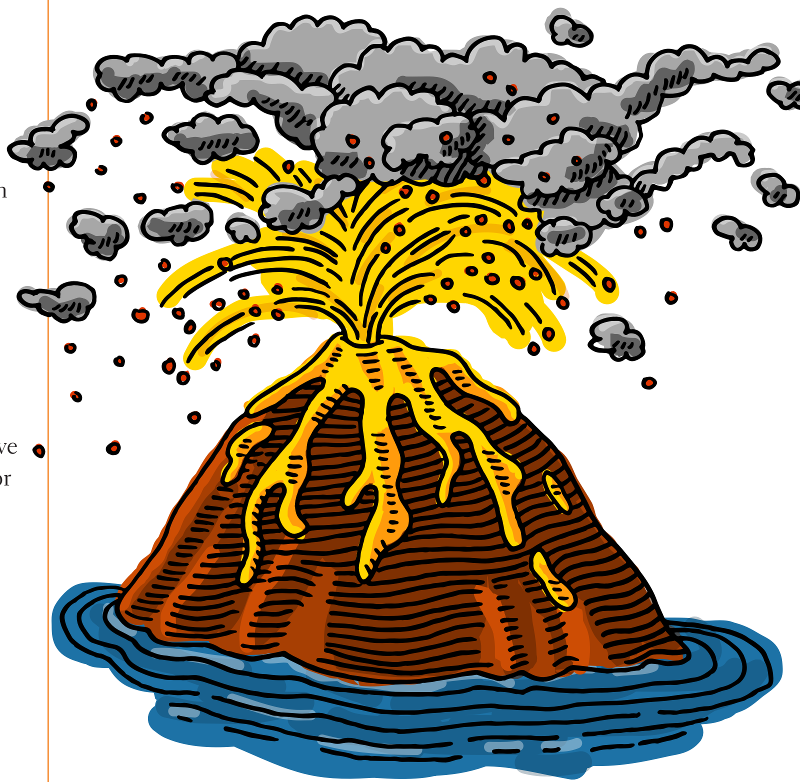
**129. Examine workforce availability.** The port should have access to an experienced workforce with a reputation for reliability. Don't just shop price—reliability and good service are equally, if not more, important. Make sure port management has a good relationship with its existing labor force.

**130. Know the port's restrictions.** Weight limits for various cargoes vary by city and region. Overhead obstructions (bridges, tunnels, pedestrian walkways) and dimensional restrictions (vehicle/trailer length, width, and height) can hinder port access, while routes into and out of ports might require trucks to encounter multiple traffic lights or drive through light commercial or residential areas.


**131. Check out the financial incentives.** Many ports are attracting business through incentives. Find out if the city or port offers attractive lease rates or bonding ability.

**132. Look for a stable, predictable regulatory environment.** Consider a port that has a strong relationship with, and proven record of, collaborating with industry, regulators, and legislators—including on environmental issues—to benefit shippers. Make sure the port is compliant with federal security initiatives.

**133. Note Foreign Trade Zone (FTZ) access.** If you are involved in zone-to-zone transfers, exporting, international returns, or quality control inspections, select a port that has an approved and active FTZ to take advantage of the cost reductions associated with these activities.



**134. Prepare for the unexpected.** Consider a port that can easily respond to supply chain disruptions by offering alternative services to container transport, and easy access to other modes. Ask how they will help you ensure your shipments keep moving in the event of a natural disaster.

**135. Investigate the port's container and vessel tracking tools.** What kind of technology capabilities does it have? Can you also use those tracking tools for Internet access, email, and text messages? Does the port provide a toll-free number?

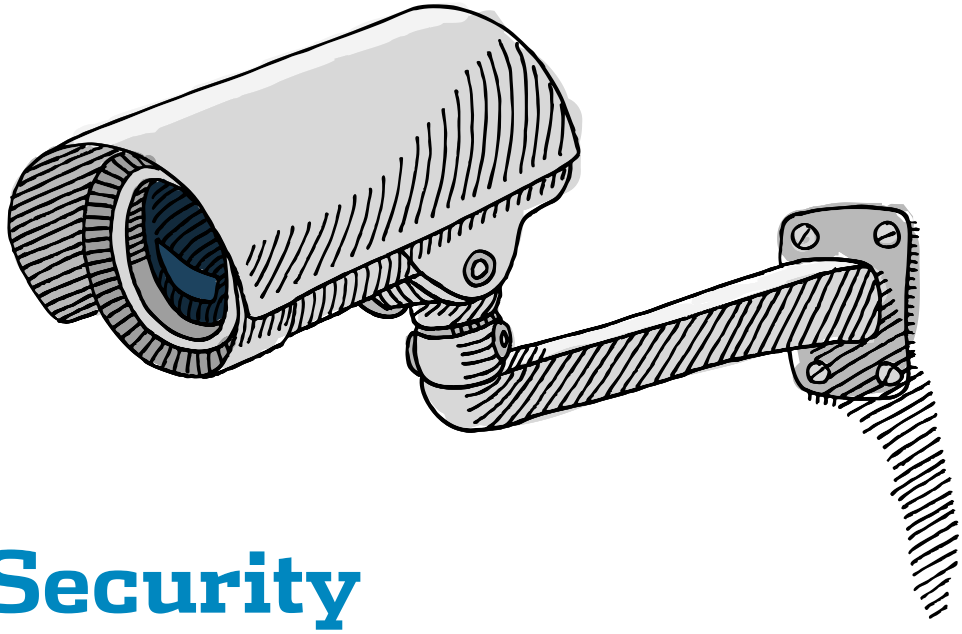
**136. Calculate the port's savings potential.** Determine if the port has processes in place to reduce overall transportation costs. For example, is there adequate capacity to eliminate congestion? Are procedures streamlined to reduce

loading/unloading times and prevent delays? Ports with facilities for transferring fuel, food, water, waste materials, and supplies all in one place can shave hours off a vessel's time—and costs—at dock.


**137. Check the port's operating hours.** Does the port have convenient operating hours to access port services? Investigate the dwell times between ship and rail.

**138. Examine the companies currently operating at the port.** Are they satisfied with the port and its operations? Note which companies could complement your business, and vice versa. Having a location in a port, which is often an industrial maritime development park, could serve as a catalyst for your company.

**139. Consider inland ports.** Perform a transportation analysis to calculate what you spend now, then project what it would cost to use barge in an inland port system. Moving inland and shipping via barge could save money in the long run. Check out the carrier service offered at the inland port, and determine whether you have contracts with those carriers, and if they can meet your freight handling needs.



# Security

Security breaches in the United States cost industry tens of billions of dollars each year. If you manufacture, distribute, or ship high-value items, your company's security could be at risk. Follow these tips to secure your facilities and cargo.

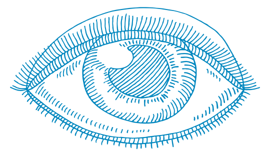
**140. Put in place physical access and employee/visitor controls.** Ensure employees always wear photo ID badges, and that visitors display clearly visible badges that document their identity, date and time of visit, and the person they are seeing. Always escort visitors, and never compromise controlled access to sensitive areas.

**141. Make pre-employment verification a priority.** Thoroughly interview and screen potential employees. In addition to asking applicants to submit a resume, employment history, and references, have them sign a release form authorizing your company to perform a background check.

**142. Protect against malicious behavior by former employees.** If an individual is terminated, ensure that all company property, identification badges, passwords, and other documents are returned, then escort the individual from company premises.

**143. Stay up-to-date on security regulations.** The global supply chain is at risk from terrorists who will exploit any weakness. Make sure you understand and conform to known World Customs Organization/ U.S. Customs and Border Protection regulations.

**144. Protect your facility with proper security fences.** Install perimeter fencing around container and truck yards, and inspect the fencing regularly. Guard security gates continually, and closely monitor access to terminal locations.



**145. Keep an eye out.** Install external lighting, specifically in terminal areas that see little activity or traffic. In many cases, it makes sense to install video surveillance.

**146. Increase security awareness among employees.** Workers can minimize the potential for cargo theft by knowing how

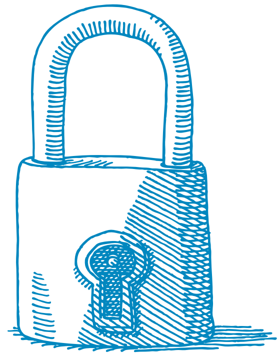
to respond to unexpected situations involving intruder entries and terminal incidents. Provide annual training, at a minimum. Better yet are quarterly training sessions on topics such as customs and law enforcement; how to identify and report suspicious activities; recognizing internal collusion; and the promotion and maintenance of sound security procedures within the supply chain.

**147. Protect your IT/data center.** IT personnel are especially vulnerable to security breaches, so access should be limited to authorized personnel. The IT center should be set apart from other operations, and have a separate source of non-interruptible power, as well as a firewall device to restrict users to pre-determined content. Password-protect desktop access, and maintain a fully secured data structure with appropriate backups at regular intervals.

**148. Test your security program.** Testing can be done at little or no expense. You can, for example, park an unmarked vehicle in an area that is off-limits to through-traffic, plant a person with a visitor's badge in a sensitive area of your facility, or deliberately change some aspect of a container's identification, such as its bill of lading, container ID, or seal sequence number. Then monitor, observe, and critique how employees and gate personnel react to these scenarios.

**149. Apply for C-TPAT certification.** What better way for your company to identify its true strengths and vulnerabilities than through a thorough self-assessment? Any company that qualifies for C-TPAT status should immediately contact U.S. Customs and Border Protection to obtain an application. C-TPAT eligibility requires a vulnerability assessment conducted via a customs-supplied questionnaire. This initiative alone should expose most security weaknesses within a company's supply chain.

**150. Conduct random container/trailer inspections to help identify irregularities.** Drivers should surrender their identification to your guard, who verifies the information. The guard should record the container number, license plate of the rig, seal number, date, and time. Random spot checks of containers are always beneficial, and should be done in the presence of more than one security officer.



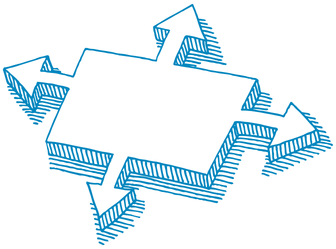
**151. Apply high-security seals.** As identified by ISO 17712, high-security seals conform to all current and upcoming sealing mandates and regulations. Train all users to recognize compliant, high-security seals, and to identify indications that suggest theft or pilferage. Make sure that test documents proving compliance to ISO 17712 exist, that the test facility is A2LA-certified and independent, and that the manufacturer has been audited by a certified entity.

# Risk Management

Most companies know supply chain vulnerability poses a threat to their operations, yet few perform analysis or plan strategies to minimize risk to the bottom line. These tips can keep your supply chain flowing during any disruptions.

**152. Identify and assess current risk.** Quantify and prioritize risk, then develop a mitigation strategy. Start backward from the customer and gauge the revenue impact of supply chain disruptions. Follow that trail through the manufacturing cycle to the potential sourcing or logistics constraining factors.

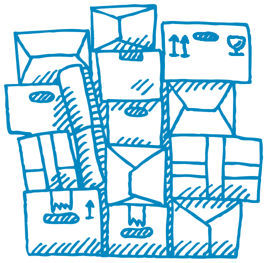
**153. Do rigorous "what-if" analysis.** Identify situations that could disrupt operations and develop contingencies to overcome these scenarios. Ask questions such as "What if we lose this supplier?" to create a strategic supply chain design that is optimally hardened against disruptions and serves as a cornerstone for a comprehensive business continuity plan.



**154. Ensure you have multiple transportation plans in place.** Ruptured transportation means products and parts face delays in getting to customers. You can continue shipping products to customers—if you have alternative transport plans.

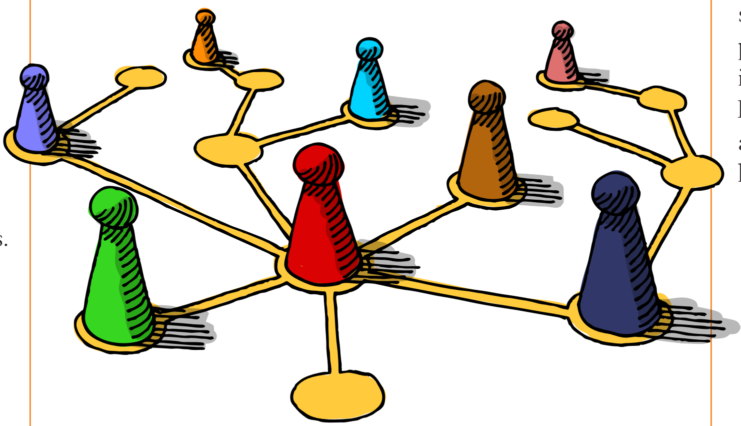
**155. Update plans regularly.** Factors such as new government regulations or suppliers can cause fluctuations in your company's vulnerability levels. It's vital to put in place consistent programs for updating your supply chain's resilience by reevaluating its design and instituting a corporate culture of security.

**156. Create a balance between supply chain network efficiency and operations resilience.** Take a holistic view of your supply chain to determine optimal network designs that ensure products are manufactured in the right location at the right time and will ship to the right customers.

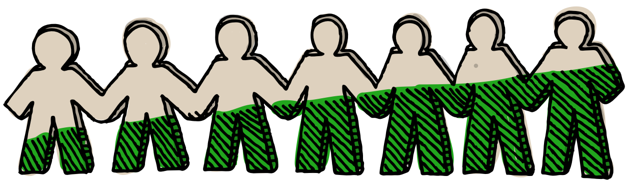


**157. Compare the cost of stockpiling inventory against the risk of losing sales and customers, and creating a negative impact on bottom-line profitability.** Too much inventory at the wrong location adds to bottom-line costs. Determine optimal inventory policies and levels to sustain your company.

**158. Empower your trading partners.** Institute a collaboration platform and communications framework designed to facilitate information exchange, while cutting costs and reducing errors.



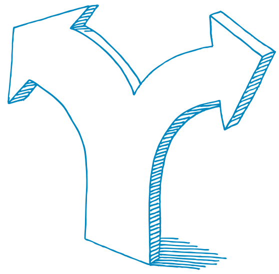
**159. Select vendors in different geographic regions who supply through secondary ports.** Maintaining a diverse base of suppliers—even when equivalent materials are available from suppliers in the same region—will help if one country experiences a disruption.



**160. Fully engage in supplier relationships.** Because you will need to rely on them for help if disruptions arise, monitor suppliers for any potential problems. This includes knowing the suppliers' risk factors: financial strength, regulatory compliance, risk management practices, and the political stability of their countries.

**161. Take control of logistics processes.** Instead of abdicating to the suppliers' delivery, bring items closer to home where it makes economic sense, and globally source where savings are balanced by assurance of supply. It is crucial to take ownership of both the supply and delivery processes to understand the inherent risk, regardless of who has economic responsibility for delivery according to the terms of the sales contract.

**162. Jointly plan for and collaborate about potential supply chain disruptions.** Include suppliers, logistics service providers, and customers in your collaboration plans. Drive toward mutually available risk plans for each link in your supply chain.



**163. Build flexibility into processes so you can promptly adapt to changes with minimum impact.** Share forecast and demand information with trading partners so you can be more responsive to customer demand fluctuations. Develop a corporate culture of agility, rather than reactivity. Agile companies can respond rapidly and effectively to manage supply or demand changes. ■

AUTOMOTIVE LOGISTICS:

# THE UPSIDE OF RESILIENCY

**Assembling supply chains that are both lean and resilient helps carmakers steer through risks and disruptions without taking a hit.**

By Lisa Harrington

In 2011, the Fukushima tsunami and nuclear meltdown in Japan shook international supply chain networks, particularly for carmakers. The global automotive industry was already busy recovering from the U.S. financial meltdown, dealing with a European market hobbled by the Eurozone debt crisis, and scrambling to meet demand in exponentially growing markets such as China and India.

Toyota's manufacturing was affected by the compound disaster in Japan. But some of its suppliers were devastated, including Japanese semiconductor manufacturer Renesas, which makes about 40 percent of the chip controllers that power today's new cars. Through its just-in-time (JIT) operation, Renesas delivered chips to the Toyota supply chain with a six-minute gap.

But at the time, Renesas only made the chips in one factory in Japan. When that factory was decimated, Toyota immediately shut down manufacturing all over the world. The automaker literally couldn't get its hands on the processing chips to run its new cars.

General Motors (GM) faced a similar kind of supply chain exposure, with one critical difference, explains Andrew Zolli, author of *Resilience: Why Things Bounce Back*. GM had built sufficient redundancy into its supply chain, so it was able to dynamically reconfigure its supply and value network to ensure continued manufacturing of its most profitable vehicles.

As a result, in the third and fourth quarters of 2011, GM reported that the disaster in Japan would have no impact on the company's earnings. Even though it had roughly the same supply chain risk exposure, the tsunami cost Toyota nearly $3.5 billion, and knocked the company from its position as the world's top automotive manufacturer.

## WAKE UP CALL

The automotive industry woke up to the fact that while its JIT business model and super lean, highly interdependent supply chains were wildly efficient, they were also brittle—susceptible to disruption on a potentially massive scale. Simply put, traditional JIT automotive supply chains were not resilient and, as a result, were at increasingly high risk of failure.

Acting on this knowledge, the auto industry and its supply chain partners have embarked on efforts to craft a revised operating model: Supply chains that are simultaneously lean and resilient. This model retains the principles of JIT and lean manufacturing, but adds controlled redundancy and contingent options to improve resiliency and protect against failure.

The evolution toward this hybrid supply chain model is ongoing. Automotive companies are rebalancing their supply chains to build in carefully managed tolerances for volatility. The goal is to build a supply chain that can tackle conditions of systemic volatility—good and bad, ranging from the ordinary to the unthinkable—while preserving or enhancing profitability.

The new resilient automotive supply chain recognizes the need for collective, rather than sequential, risk management; and facilitates collaboration on the new scale that is necessary for survival. It is built on true supply chain partnerships that create agility and contingent scale/capability, delivered in an "on-call" model.

These partnerships span all players in the sector: original equipment manufacturers (OEMs), suppliers, and supply chain service providers. They embody what Zolli refers to as the two defining aspects of resilience: the ability to maintain a core purpose, and the ability to restore core purpose in the face of a disruption.

## AN INDUSTRY IN FLUX

To understand this new hybrid automotive supply chain, it helps to consider the industry's market dynamics. Four major trends are reshaping the sector:

**Auto production lines have long relied on just-in-time parts delivery and Lean processes. Contingency planning can help automakers protect their supply chains by improving resiliency in the event of disruption.**

**General Motors (*top*), which built resiliency into its supply chain, was able to keep cars rolling off the line after the 2011 tsunami in Japan, while Toyota's (*bottom*) lack of contingency planning crippled production.**

**1. Global growth and emerging markets.** Despite the drag effect of the debt crisis on the European market, global automotive production is forecast to hit record levels each year through 2017, with emerging markets driving the growth.

**2. Getting closer to the customer.** Auto supply chains are now inextricably linked to supply chains outside the traditional automotive circle—for instance, consumer electronics.

**3. Relentless cost pressure.** Logistics costs are typically equal to five to 10 percent of automotive manufacturing revenues. To be more competitive, companies must use every trick in the book to reduce costs and improve market share.

**4. Mega-plants and multiple platforms.** Automakers are investing heavily in building mega-plants in overseas locations such as China and Mexico. "These mega-plants—based on the concept of building to a common engineering platform—produce up to six different vehicles in one location," says Mike White, senior vice president, global automotive sector, DHL Supply Chain. "This improves capacity while reducing the need to build new plants."

As OEMs build mega-plants in new geographies, they are asking component suppliers to follow them into supplier business parks to provide greater support.

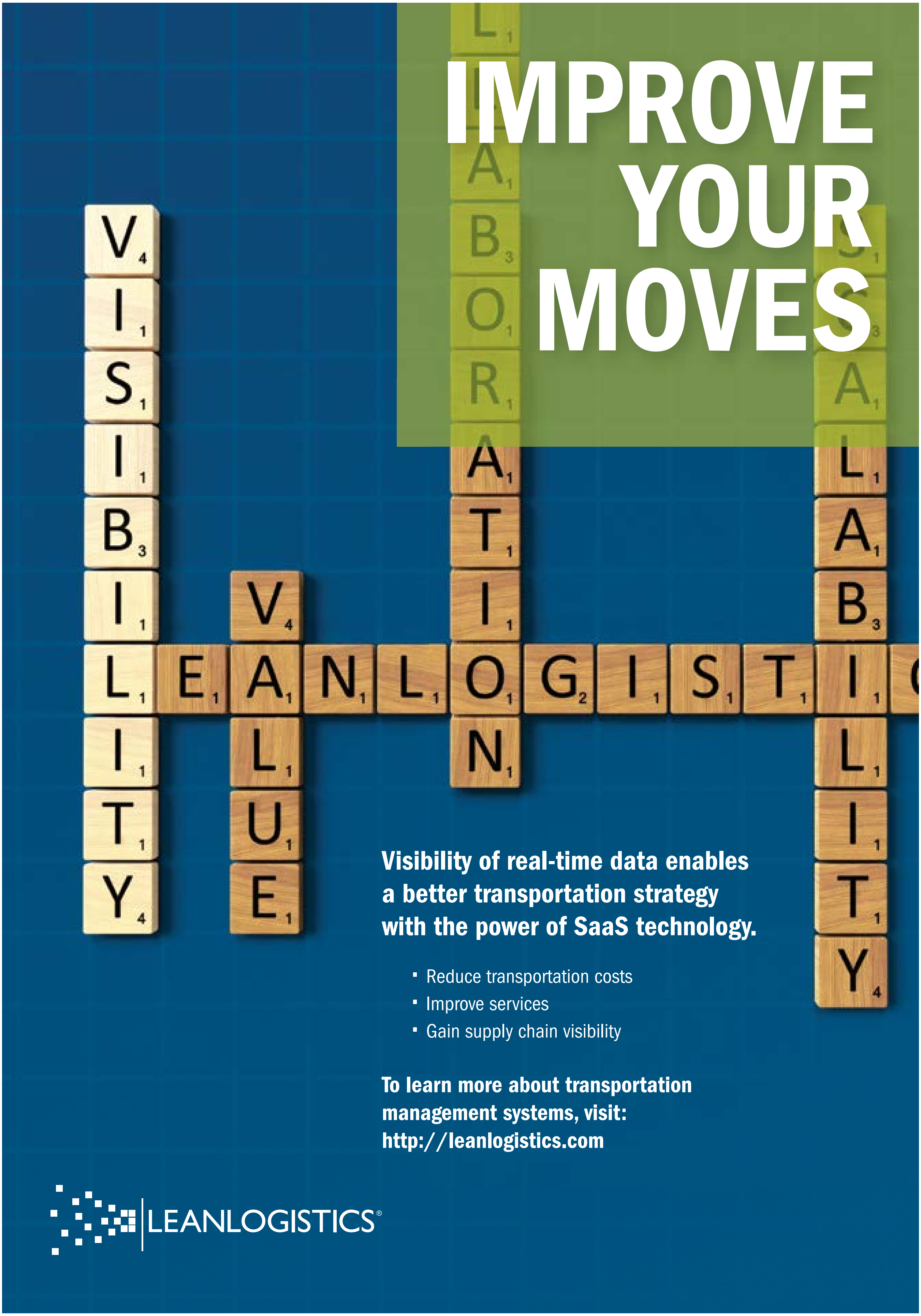
## A SUPPLY CHAIN HYBRID

Building a supply chain that is both lean and resilient means creating a new hybrid that balances the need to reduce costs with effective use of redundancy, contingent scale, and capacity. This is no easy task, and the solutions depend on multiple variables that differ by customer, geography, and provider.

In the automotive sector, however, the following attributes are emerging as the hallmarks of this lean-resilient supply chain hybrid:

■ **Globally agile execution.** Supporting the automotive supply chain—with its need for leanness and responsiveness—requires a new level of tactical logistics agility across a global footprint. The days of knowing what will occur 30 days out are gone. Third-party logistics (3PL) providers that support the automotive industry have to build supply chains that can switch gears at a moment's notice, but not break the bank in doing so.

As the entities charged with daily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execution of the auto supply chain, global lead logistics providers (LLPs) need a portfolio of solutions, expertise, and systems to deliver this tactical logistics agility.

The benefits of using an LLP that holds deep expertise within the automotive industry include: agile and adaptive supply chain execution; supply chain event mitigation and contingency solutions; in-country and global supply chain expertise and relations; end-to-end supply chain visibility; established continuous improvement cost management; consistent, reliable, and cost-effective transportation and delivery; demonstrated supply chain best practices; and supply chain risk assessment and management. These factors combined provide the automotive industry with the edge it needs to take on the unknown.

■ **Contingency planning.** It is impossible to plan for every specific natural disaster or major supply chain event, but companies can develop contingency plans around types of supply chain deficiencies.

To build these contingent solutions, best practice 3PLs perform extensive what-if scenario modeling on a broad range of events and situations. Using such modeling scenarios, the LLP can test different solutions geared to specific auto companies, see what works, and learn how to best respond to minimize impact and responsibility.

■ **Real-time, multi-tier visibility.** Supply chain resiliency is impossible without accurate real-time supply chain condition information. "Visibility reduces uncertainty, and enables businesses to achieve a demand-driven supply chain," explains Martin Christopher, emeritus professor of marketing and logistics at the Cranfield University School of Management in Bedford, England.

"It also reduces supply chain risk through shared information, both upstream and downstream of operations," he adds.

Best-in-class global LLPs can provide what amounts to an on-the-ground sensor grid in their countries of operation, geared to monitoring supply chain condition continuously. Their supply chain software solutions deliver visibility into supplier production, inventory, and in-transit goods. Using this information, the LLP develops a supply logistics plan for every part, all the way to the production line.

This plan incorporates cost per unit, which the LLP uses to understand how a given supply chain deficiency impacts the auto company's costs, and the cost for alternate supply chain solutions. The LLP then evaluates how that expense impacts the auto company's overall supply chain cost structure.

■ **Innovative partners.** In the automotive sector, resilient supply chain management is based on partnerships, particularly with the LLPs that implement the on-the-ground solutions. These are not the transactional buyer-vendor relationships of old. They are more akin to a marriage.

Manufacturers have recognized that the old approach of squeezing vendors on price does not support their objectives. Instead, it is more about partnering to develop an innovative continuous improvement plan, backed up with the cost trade-off business case. An important component of this partnership is a mutual understanding of enterprise-wide value at risk.

Under this approach, the LLP and automotive company can assess supply chain risk in the context of what value is at risk if some or all of an organization's capabilities were destroyed and it had to start from scratch. They determine which market and product or service they would focus on first, and how they should shape the supply chain network to support the company's priorities.

The automotive industry's journey toward creating supply chains that are simultaneously lean and resilient is still in its early stages. The lessons learned from disasters, disruptions, and high volatility levels over the past few years make several points clear. Supply chain vulnerability is a network-wide issue, and must be addressed on a network-wide basis. This requires higher levels of information sharing across the supply chain, particularly with the LLPs charged with executing the collective 3PL supply chain operations.

Best practice companies are partnering with global LLPs to rebalance the automotive supply chain, enabling it to respond to volatility of any kind–be it an unexpected sales spike or a fire at a major supplier. This means building out capabilities, strategies, and tactics that:

■ Deliver agility, appropriate redundancy, and contingent capacity that can be switched on at a moment's notice.

■ Develop cost-effective alternative solutions and scenarios to market or operating developments, such as re-routing shipments during a port strike.

■ Improve visibility across the supply chain via robust IT architecture and close linkages into supply chain partner systems. Visibility enables a control tower view of supply chain events, complete with proactive alerts for existing or potential problems.

■ Partner for mutual benefit by collaboratively focusing on metrics and continuous improvement.

The LLP's job is to understand the unknown, and engineer a portfolio of fully costed alternatives and solutions that can be rapidly deployed across all automotive supply chain parties. This means having the people, systems, processes, capacity, and tools in place to deal effectively with volatility.

Automakers that embrace the new normal of continuous—and sometimes radical—supply chain volatility and risk, and put processes and systems in place to better manage both, regularly outperform their competitors. Companies that ignore or lag behind in addressing supply chain volatility do so at the peril of their bottom lines and shareholder confidence. ■

Adapted from *Lean and Resilient: The New Automotive Supply Chain Hybrid* by Lisa Harrington. Read the full whitepaper at supplychain.dhl.com/auto-resilience.

Building a supply chain that is both lean and resilient means creating a new hybrid that balances the need to reduce costs with effective use of redundancy, contingent scale, and capacity.

THE DIRECT SALES SUPPLY CHAIN:

# Where There's a Will

# There's Amway

**George Calvert, chief supply chain and R&D officer for Amway, calls on *Inbound Logistics* to talk about the direct sales business and how Amway's supply chain is adapting to globalization, new technology, and changing consumer behavior.**

by Joseph O'Reilly

The days of Avon ladies and Fuller Brush men regularly showing up at customers' doorsteps are long past. But their entrepreneurial spirit is alive and well. Today's direct sales business is changing with the times. Social media connections and web conferences are replacing door-to-door handshakes. A new generation of marketing—broadcast across social media, and consummated with the personal touch of a one-on-one infomercial—delivers where e-commerce and brick-and-mortar end.

"Direct selling is a cultural norm; in essence, it's the first social network," says George Calvert, chief supply chain and R&D officer for Amway, a leading direct sales company based in Ada, Mich.

It's also profitable. In 2012, direct retail sales grew 5.9 percent to $32 billion in the United States, and the number of people involved in sales grew two percent to nearly 16 million, according to figures from the Direct Selling Association. Amway totaled $11.3 billion in sales in 2012, topping Avon ($10.7 billion), Herbalife ($4.1 billion), Vorwerk ($3.3 billion), and Natura ($3.2 billion), among others (*see chart, page 124*).

But the real growth opportunity lies outside the United States. Global direct sales hit $167 billion in 2012, according to the World Federation of Direct Selling Associations. Amway, which was founded in 1959, currently distributes products in 100 countries and territories around the world.

Growing consumption in emerging economies has stoked demand for new products. Economic liberalization and empowerment has similarly created opportunities for ambitious self-starters. Independent business owners (IBOs)—today's equivalent of door-to-door salespeople—are tapping into a sophisticated supply chain, replete with innovative new products. The world is literally at their doorstep.

**In a recent interview with *Inbound Logistics*, George Calvert discusses Amway's success as the largest direct selling company in the world, and how its supply chain strategy is evolving to support this unique business model.**

**IL: Describe direct selling in today's consumer-driven world.**

**CALVERT:** It's selling to people you know: your community, friends, and family. Direct selling goes back to the Fuller Brush man showing up at a customer's door with his leather case—even though very little of our business starts that way now.

Amway is a direct selling company. The day we lose sight of that is the day we're done. We will never go around our IBOs. What trust, what integrity do we have then?

Our products have to be appropriate for this business model; we can't sell just commodities. Amway needs some meaningful differentiation, so we have to invest in research and development, training, and tools such as mobile technology that empower the distributor.

But that investment is also the advantage of this business model. If consumers go to the store shelf, they can scan a product and pick up some information. But direct sales affords us the chance to talk to the consumer about a product.

Amway is also expanding into markets where the concept of free enterprise is new. Our Vietnam business, for example, is growing fast. Why? People there are industrious. They're looking for a chance to build a business, and we're teaching them how to do that by becoming an IBO.

**IL: How does Amway's business model fit with e-commerce and omni-channel management?**

**CALVERT:** E-commerce allows an Amway IBO to showcase the product. Because of our business model, we're not going to put our products into an e-commerce channel just so customers can go online and place an order. Instead, e-commerce enables Amway and its IBOs to be more efficient.

In markets such as China, we operate hundreds of storefronts. But those stores don't compete against our IBOs. Instead, the

IBOs use these 'experience centers' as places to bring prospects and showcase products.

These brick-and-mortar storefronts serve many purposes: To talk about and demonstrate products, train IBOs on how to sell the products, and even prove to doubters that a real company stands behind all this.

One of our shops in Shanghai is no bigger than an average conference room. A warehouse in the back is maybe twice that size. Amway does $100 million in sales annually out of that shop.

**IL: What types of products does Amway sell?**

**CALVERT:** Many people think of Amway as a U.S. soap company, doing door-to-door sales like Fuller Brush, Avon, and Mary Kay. The truth is, Amway is an Asian health and beauty company. Look at the statistics: we reached $11.3 billion in sales for 2012, and our top 10 markets all grew. This was our seventh consecutive year of increased sales.

Our biggest product line is Nutrilite, a brand of nutritional supplements sold around the world. We also maintain very strong sales in skin care and durables, which include water and air treatment systems, and cookware.

Home care products, while a smaller slice, is still a growth area of our business. This line includes everything from cosmetics to personal care products such as shampoo.

**IL: Are Amway's products agnostic or unique to different countries?**

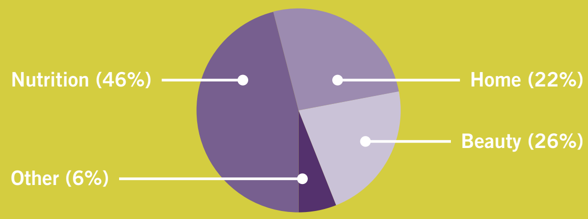
**CALVERT:** While we aim for uniformity where we can, we do tailor our products to different markets. In Europe, for example, we have a few standard SKUs. But nutrition products have to meet local regulatory requirements; there are some ingredients you can and cannot use. For those products, we almost always need separate SKUs.

We can often get away with having a single SKU for skincare products. For example, we will soon launch our new Artistry Youth Xtend skincare collection globally. The tube, ingredients, formulas, and fragrance are all the same, but we'll have different SKU-level labeling and cartons to meet individual country requirements.

I was recently in Brazil to visit Nutura, a personal care company that makes products with Brazilian scents, colors, and rain forest material. Nutura's business model works in Brazil, but I'm not sure you could export it to France and be successful.

Home care products vary greatly, depending on the country. In France, you might sell a high-efficiency steam washer. That's a very different product than what you will find in China, where there are no steam washers. So we have certain SKUs that are common, and some that are tailored to local needs.

**Amway features more than 450 unique products carrying its name. Top-selling brands include Nutrilite, Artistry, and eSpring. In 2012, sales across product categories were aligned accordingly.**




**IL: Amway's name is a contraction of "American Way," yet you label it as an Asian health and beauty company. Explain.**

**CALVERT:** Amway is still a U.S.-based company. Up until 1989, we were predominantly domestic; today, however, more than 90 percent of our sales are international.

Our single biggest market is China, and that's where we've seen phenomenal growth in the last five to seven years. Amway operates a complete business model, beyond even supply chain. We grow, harvest, and process our own crops; deliver to our manufacturing centers; and dispatch through our DCs. We own the sales side, too. Companies such as Procter & Gamble are often held up as examples of companies that operate an end-to-end supply chain. But they don't have their own retail stores.

Amway manages the upstream side, too—whether it's farming; printing for high-end skincare cartons, labels, and catalogs; or our plastic blow mold operation that produces 88 million bottles annually.

**IL: How has Amway's manufacturing and sourcing strategy changed?**

**CALVERT:** Until about 2010, most of our supply chain and manufacturing was U.S.-based. That has now changed. Amway has been moving home care manufacturing closer to the point of sale in different regions. We're making product in Belgium for Europe and Russia, and producing in China for Southeast Asia.

We discovered that on some of our products, duties and transportation were the predominant drivers of supply chain cost. Manufacturing and labor overhead were not as influential as they might be for a clothing manufacturer, for instance. Now we're moving our durable goods production to Malaysia, and our home care production to other regions closer to demand.

It is inexpensive for us to ship a $60 bottle of Nutrilite vitamins. But taking an $8 bottle of concentrated home care product—which is still liquid—and sticking it in a container? That's inefficient. I hate putting water on water. Air in air is even worse.

**As testament to Amway's shift in supply chain strategy, the company is in the middle of a $375-million manufacturing and R&D overhaul. The expansion includes four facilities in the United States that will support different aspects of its Nutrilite brand, as well as a new manufacturing center in India, and second sites in both China and Vietnam.**

**Additionally, Amway is building a $10-million botanical research and experience center in Wuxi, China, near Shanghai, to integrate scientific knowledge used in product development with the historic use of traditional Asian plants.**

**IL: Knowing you had a market in Asia, why didn't you move production there sooner?**

**CALVERT:** It was a simple matter of inertia. It's difficult to take an entire durables assembly and move it from one spot to another. Change is bad, right? Making changes to a durable goods product, or manufacturing it differently, leads to production problems, maybe even consumer problems. It requires a lot of resources. If there aren't significant financial and efficiency gains, it's not worth doing. For example, we're not moving cosmetics or nutrition products manufacturing, because those products don't cost much to ship.

It's also a marketing advantage. Consumers in Malaysia would rather buy vitamins that say Made in the USA versus Made in Kuala Lumpur.

Home care products are different. Consumers care only about price, value, and performance; they don't necessarily look at where a TV comes from. But they do care where a nutritional product comes from.

So we looked at our supply chain to see what we could do to bring down transportation and distribution costs. We put together a list of 40 projects. When we went to get the baseline analytics to justify these projects, it turns out the data drove a different conclusion.

The numbers said it's not about labor and it's not about overhead. Those aren't drivers for us. Amway's distribution and duties costs are three times those of labor and overhead. That is not true of many industries.

We then looked at the overliers of unique business requirements. You don't want cosmetics from China—unless you're in China. You want them from France, New York, Japan, or Korea. That's where the centers are. So we cross-referenced those locations, and came up with our list of potential options. We've been executing against that plan since May 2010.

**IL: Is it fair to say you have regionalized your supply chain?**

**CALVERT:** No, but that's an interesting question. We have regionalized some areas, such as home care. Why? Because transportation costs for home care products are so high that it would knock the price/value down. And it's pretty easy to manufacture home care products in a lot of different areas globally. It's mix liquid, fill. And our home care business was spread out enough that it made sense to transfer manufacturing to different regions.

But we have a U.S.-centric supply chain for nutrition and cosmetics products, which are globally supplied from Michigan. We also used to source our durable goods line out of the United States. But we decided to stop manufacturing in Michigan; we make those products elsewhere now. We didn't regionalize that business line because we didn't split it up. Rather, we moved it to where 90 percent of our sales are located.

**IL: Has Amway's early penetration in some of these global markets provided a competitive advantage in terms of its direct selling approach?**

**CALVERT:** Our early penetration into global markets makes absolutely zero difference. I'll give you three examples why. First, our oldest international market is Australia (Amway started there in 1971); it's also our least well penetrated. In terms of growth,

## Top Global Direct Selling Companies

**Amway was named the 2013 top direct selling company in *Direct Selling News*' Global 100 ranking.**

| 2013 RANK | COMPANY NAME | 2012 REVENUE | COUNTRY |
|---|---|---|---|
| 1 | Alticor (Amway) | $11.3B | USA |
| 2 | Avon Products | $10.7B | USA |
| 3 | Herbalife | $4.1B | USA |
| 4 | Vorwerk Co. KG | $3.3B | Germany |
| 5 | Natura Cosmeticos SA | $3.2B | Brazil |
| 6 | Mary Kay | $3.1B | USA |
| 7 | Tupperware Brands Corp. | $2.6B | USA |
| 8 | Nu Skin Enterprises | $2.2B | USA |
| 9 | Oriflame Cosmetics SA | $2.0B | Luxembourg |
| 10 | Belcorp | $1.9B | Peru |

Source: Direct Selling News

it's one of our few markets that shrank in the past few years.

Second, China is one of our fastest-growing markets. We hold a significant share of the nutrition business—a 90-percent top-of-mind favorable reputation. We've been in the China market for about 10 years, and only started growing significantly there since 2003.

A third example is Vietnam. Amway has been there for about six years. Avon was in Vietnam well before us, and it just closed up business.

In those markets, being the first mover is not the difference. The difference is our business model.

**Calvert holds a Ph.D. in chemistry, and formerly was responsible for product development, design, formulation, package engineering, and process engineering, among other functions. So he brings a unique perspective to his role as Amway's chief supply chain and R&D officer.**

**In the consumer goods industry, quality and safety are paramount considerations. And because Amway owns the means of production on through to sales—in many cases, raw material sources as well—sustainability and product lifecycle management are fundamental concerns.**

**Amway's sustainability footprint is firmly entrenched. The company's original product line was Liquid Organic Cleaner, one of the first concentrated, biodegradable, and environmentally friendly cleaning products. But, as Calvert explains, Amway is in the business of meeting consumer demand—and green science doesn't always resonate.**

IL: **The consumer goods supply chain is sensitive to product quality and sustainability. How does Amway embrace green?**

CALVERT: Amway's foundation is in home care, so we've always been an environmentally friendly company. Our nutrition line is the best of nature and science. We do organic farming on 6,000 acres, and our Artistry products include spinach concentrate.

Yet we never talk about it. The truth is, being environmentally friendly is not our business. Our business is empowering people in Asia to start a business of their own.

IL: **Do you think that's because you're selling product where sustainability has not gained as much traction?**

CALVERT: All our home care products are designed for the environment, so we've already gone through that vetting process. That's a big part of our home care line's heritage. But ultimately, if consumers can't get their clothes clean with our product, they won't want it.

A certain group of consumers won't care if their clothes get clean; all they're looking for is the lowest carbon footprint, the lowest environmental impact. But that's a fraction of the market.

We don't generally base our business model on a fraction of the market. Seventh Generation and some of Clorox's new product lines are trying to attack a large market cap within that smaller market. But that's not us. Amway's job is to appeal to a broad-based audience. I'm sure you can find a lower carbon footprint water treatment system. But you won't find one that works better against virus bacteria—which, if you're living in Malaysia, is more important.

IL: **Is there any advantage to pairing R&D and supply chain disciplines?**

CALVERT: Yes. Take free trade agreements as one example. We just moved our water treatment system production from Michigan to Malaysia. This gets it closer to the point of sale, and reduces transportation costs, carbon footprint, lead time, and inventory. Pairing research and development with supply chain allows us to develop secondary sources. If I can substitute some source materials for others, and not have to pay duties, that's a huge financial advantage.

The same applies to home care. When we moved production to Europe, we were able to qualify new materials. It's not just a supply chain matter; R&D is involved as well. One material may have a different chemical makeup than another one. But if we modify the formula slightly, we can get a $2 per pound difference in the finished goods price.

IL: **In terms of global transportation, what are you doing to help streamline your supply chain?**

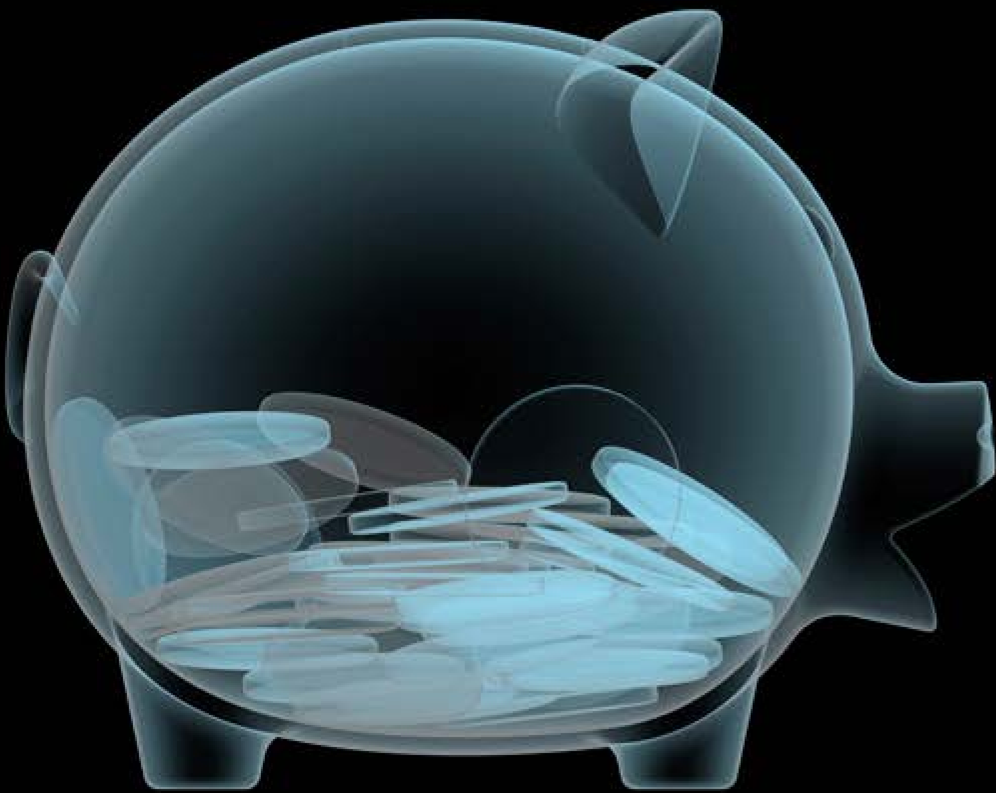
CALVERT: We moved 1,700 air shipments last year. Few of those were planned. On the ocean freight side, we moved almost 10,000 containers. If we have regular demand and supply, we prefer to use ocean freight.

As we bring home care and durables closer to the point of sale, we'll move fewer containers, but the value per container increases. So we are looking to rationalize movements. As one example, our luxury cream sells for $250. Would the value of the inventory alone be worth always shipping that product by air in lieu of holding more expensive inventory? We're also trying to find different ways to bring product into port—and through different ports.

We constantly model our network, and identify opportunities for volume leverage. But we also recognize that last-mile moves are often regional.

Why don't we just run all our freight through FedEx and UPS in the United States? Because it's more expensive than working with regional carriers that are very good at what they do. That doesn't mean we won't work with FedEx and UPS in different parts of the world. We try to combine those volumes to find economies and efficiencies. ■

# CONTROLLING COSTS IN THE HEALTHCARE SUPPLY CHAIN



Increasing regulation, supply chain inefficiency, and product security concerns plague healthcare companies already crippled by rising costs. Treating the ailments with high-tech tools and optimized logistics provides relief.

by Justine Brown

Healthcare costs are rising at an alarming rate. Projections show healthcare spending in the United States will reach $4.8 trillion by 2021, according to the Centers for Medicare and Medicaid Services. For healthcare businesses, improving logistics management plays a growing role in controlling costs.

"Seven or eight years ago, controlling supply chain costs in healthcare was not critical," says Clive Lester, European business development specialist for healthcare at Tokyo-based third-party logistics (3PL) provider Yusen Logistics.

"But over the past few years – during which research and development costs, for example, have quadrupled – healthcare businesses have started seeking areas where they can save money," he continues. "One such area is the supply chain."

Healthcare companies have traditionally had healthy margins, but the industry's changing landscape puts margins at risk. "As a result, healthcare businesses have to better manage their operations," says Kyra Sweda, director of business development for Ryder Integrated Logistics, a division of Miami-based 3PL Ryder System Inc. "The industry traditionally operates in silos, but it is imperative that healthcare companies improve visibility to make smart decisions that integrate the whole supply chain."

Increasing regulation, supply chain inefficiency, and product security concerns also plague the industry. Here's a look at how healthcare companies and their supply chain partners are working together to treat the problem.

### An Uncertain Regulatory Environment

Regulatory compliance ranks as the top supply chain concern among healthcare companies, according to the *2013 Pain in the (Supply) Chain* survey conducted by Atlanta-based logistics provider UPS. Sixty-three percent of global healthcare executives – leaders in the pharma, biotech, and medical device industries – surveyed cite regulatory compliance as their top challenge.

"We know regulations and compliance will continue to change," says Sweda. "What we don't know is how healthcare companies will deal with the change—and how it will ultimately affect their supply chains."

Numerous industry factors – including heightened concerns over security and patient safety, enhanced cross-border controls, and an increase in temperature-sensitive products entering the marketplace – are driving a growing focus on regulations.

"For many companies in the healthcare sector, the primary challenge is to comply with a myriad of trade, security, safety, and environmental regulations," says Angie Alleva, director of trade compliance services for Philadelphia-based global logistics provider BDP International Inc. "They are struggling to obtain in-house expertise to help them comply with an ever-changing regulatory environment."

Some companies are choosing instead to outsource compliance. Freight management companies, for example, can act as compliance partners in helping importers better understand and follow regulations.

One factor that may help ease regulatory compliance pressures is an increasing push by both U.S. Customs and Border Protection (CBP) and the U.S. Food and Drug Administration (FDA) to computerize and streamline operations. For example, in August 2013, the FDA conducted a Centralized Entry Review pilot in an effort to improve efficiency and review of entries. As part of the test, the FDA required all import entry documents to be submitted electronically.

Similarly, over the past few years, CBP has undertaken several trade transformation efforts designed to update customs procedures to align with modern business practices and improve efficiencies for the trade community.

"CBP is working on a more consistent approach to help improve compliance and security at the same time," says

**While other industries have implemented product scanning, electronic ordering, order accuracy controls, and other key processes to improve supply chain efficiencies, the healthcare industry lags behind.**

Alleva. "These programs will help expedite supplies through the supply chain.

"The FDA has also improved its technology significantly," she continues. "This is critical for the healthcare industry because it is all about the data. Early and comprehensive information is powerful, and keeps the supply chain flowing to meet increasingly stringent regulations."

### Treating Inefficient Supply Chains

Another contributor to increasing healthcare industry costs is inefficient delivery systems and processes.

"A significant cost driver is the universal complexity of the healthcare supply chain," notes *The State of Healthcare Logistics Cost and Quality Improvement Opportunities*, a survey of more than 1,000 healthcare supply chain professionals, conducted by the Center for Innovation in Healthcare Logistics at the University of Arkansas in Fayetteville.

"Healthcare logistics is an area in which costs can be reduced and efficiencies gained in order to provide healthcare delivery at a reasonable cost," the report states.

Healthcare providers, distributors, and manufacturers struggle with a large error rate related to medical devices procurement processes. While other industries have implemented product scanning, electronic ordering, order accuracy controls, and other key processes to improve supply chain efficiencies, the healthcare industry lags behind.

The sector is still burdened by manual processes and a significant amount of rework. Such inefficiencies can result in ordering errors, lack of product on hand to treat patients, clinicians receiving incorrect product, and expired inventory.

"Healthcare supply chains can be unsophisticated," says Volker Shultz, senior vice president of healthcare logistics at GENCO, a Pittsburgh-based 3PL. "Often, if practitioners run out of a certain product, their only recourse is to call the supplier directly and place a rush order. If lack of that product caused a disruption in service, then they often start stockpiling to ensure they don't run out again."

Another challenge revolves around disparate proprietary data for medical devices and location information. Continuously translating data and performing manual processes can cause errors, and prevent companies from achieving efficiency.

Lack of data standardization was the most common obstacle to achieving supply chain excellence, according to *The State of Healthcare Logistics Cost and Quality Improvement Opportunities*. "Regardless of their organization, healthcare providers are using almost one-third of their annual operating funds to support the supply chain," the report notes. "Within group purchasing, distribution, and provider organizations, healthcare supply costs are incurred primarily to support inventory and order management."

### A Global Data Standard

Recently, Becton, Dickinson and Company – a Franklin Lakes, N.J.-based medical technology company – and healthcare supply chain company Resource Optimization & Innovation (ROi) collaborated on the first known instance in the United States of GS1 standards, including bar codes, being integrated across the medical device supply chain.

GS1 – an international organization that develops and maintains standards for supply and demand chains across multiple sectors – introduced Global Location Numbers (GLN) and Global Trade Item Numbers (GTIN) for the healthcare industry in 2010. The goal of the initiative is to accelerate industry-wide adoption and implementation of one common global data standard to improve patient safety and supply chain efficiency.

GTIN is used to unambiguously identify products, and communicate product data throughout the supply chain, into the clinical setting, and beyond, while GLN is a consistent standard to identify delivery locations and replace custom account numbers. GS1 data standards also enable healthcare providers to track products when treating patients, which can help reduce medical errors while improving patient care.

### End-to-End Improvements

ROi and Becton Dickinson viewed GS1 Standards as a tool that could be leveraged to improve the existing state of the healthcare supply chain, from order placement to delivery and payment, without human intervention. In this instance, the standards were implemented in the clinical care setting, from manufacturing plant to patient bedside.

"This collaboration provides a snapshot of how data standards can serve as a common platform for organizations throughout the healthcare supply chain to raise efficiency, drive unnecessary expenses out of the system, and play an important technology role in patient care initiatives," explains Curtis Dudley, vice president of integrated business solutions for ROi.

As a result of the collaboration, Becton Dickinson/ROi achieved a 30-percent reduction in days payable outstanding, a 73-percent reduction in purchase order discrepancies, improved product sourcing and replenishment, and fewer stockouts.

"Using the system, healthcare providers are now making four or five handoffs

**Many medical and healthcare supply manufacturers struggle to comply with a myriad of growing trade, security, safety, and environmental regulations. Enlisting help from a third-party logistics provider with industry expertise can help them face the challenge.**

without losing track of the data," says Shultz. "It's allowing the hospital to better manage inventory, and Becton Dickinson to streamline its supply relationship with the hospital."

### Home-Based Healthcare

Another trend in the healthcare industry is delivering medical services via technology. New tools make it possible to care for more patients in their homes. Rather than making regular visits to a doctor's office to manage a chronic disease, for example, patients can use portable, technology-based devices to check their vital signs at home. Doctors can remotely and continuously monitor blood pressure, glucose levels, and brain waves.

Over the next few years, these tools are expected to dramatically reduce both the number of hospital visits and their duration. This may mean significant growth for companies such as Lake Forest, Calif.-based Apria Healthcare, a home healthcare products provider that already serves 2.4 million patients annually.

Recently, Apria was struggling with challenges related to decreased Medicare reimbursements and increasing competition. "Apria was gaining market share, but winning by smaller margins," says Sweda. "It needed to do something to ensure its survival. It also needed to prepare for the home health industry's growth potential."

In October 2012, Apria contracted with Ryder Supply Chain Solutions to redesign its supply chain. Ryder's national engineering team began its redesign efforts by analyzing Apria's inbound supplier-to-DC channel to identify cost-savings opportunities. Apria's U.S. distribution network for respiratory therapy and home medical equipment products includes seven distribution centers, a Bio-Med center, and more than 420 branch operations locations within a 50- to 60-mile customer delivery radius.

### Too Much of a Good Thing

Suppliers made hundreds of annual direct shipments to Apria DCs. But they were shipping too often to every DC, and less than five percent of shipments were moving on truckload pricing. They were also using expedited freight unnecessarily, and a large week-to-week variance existed in order/delivery volumes. Dedicated routes were running 50 percent empty in backhaul lanes—and many ran near Apria suppliers.

Using its transportation modeling software, Ryder's engineering group and Apria collaborated to reengineer the network. They identified inbound routing and delivery optimization opportunities, and chances to provide supplier backhauls.

### Better By the Truckload

As the program with Ryder, Apria, and its suppliers gained momentum, the team identified significant cost savings and implemented operational improvements. Seventy-five percent of inbound supplier shipments are now consolidated on full truckloads. Supplier shipment frequency has been reduced to one to two times per week to each Apria DC.

The use of expedited freight has been greatly reduced, and the standard shipment method is regular truckload and less-than-truckload. The team further optimized the network by filling Ryder's dedicated operation's backhaul lanes with inbound shipments from suppliers to Apria DCs.

The effort "allows us to collaborate with key suppliers to develop a freight network solution that is a game-changer for the home healthcare industry," says Jim Chung, vice president of supply chain at Apria.

Through its supply chain redesign efforts, Apria is expected to realize significant dedicated transportation cost savings

via engineering optimization, improved backhaul utilization, and fuel savings.

Security presents another significant challenge for healthcare logistics leaders, particularly those operating on a global scale. Product security surpassed cost management as the second supply chain concern in 2013, according to UPS' survey, with 53 percent of executives citing it as a top issue. The leading security concern was increasing counterfeit sophistication (48 percent), followed by poor supply chain visibility (40 percent).

An additional challenge is the increasing number of healthcare products developed and consumed in emerging markets, which can be difficult to navigate. Companies such as Transwide, a Brussels-based logistics technology provider, are helping healthcare companies navigate these new frontiers.

For example, Paul Hartmann Group, a supplier of disposable medical devices, is working with Transwide to optimize its inbound factory, supplier, and dealer deliveries in Europe and around the world.

Transwide's Software-as-a-Service transportation management system (TMS) ensures supply chain security, monitors supplier reliability, and tracks inter-company deliveries. It has also enabled Paul Hartmann Group to dispose of non-value-add administrative tasks, and provides the company a comprehensive overview of its daily traffic.

"With an annual transport budget of around $31.3 million, we are always looking for options to improve supply chain productivity," says Fabrice Mast, Paul Hartmann France's logistics project manager. "We are currently focusing on inbound distribution, then we'll turn to improving delivery operations."

In another emerging market, Yusen Logistics and Imperial Health Sciences are launching the first temperature-controlled sea freight consolidation service from Antwerp to southern Africa dedicated to the pharmaceutical industry.

"As we move to a more global market, temperature control and quality are crucial," says Lester. "Moving products great distances while maintaining temperature control and quality is critical."

Most pharmaceutical supplies transported to Africa move via air freight. The new service will maximize the cost-effectiveness of ocean versus air freight, providing a transparent and comprehensive solution for stock replenishment.

**Other industries have been feeling cost pressure for years. With healthcare projected to grow from 18 to 26 percent of GDP in the next 20 years, the industry is now in the spotlight.**

## Diagnosis: Modal Shift

"Switching from air to sea can generate cost savings of 70 to 80 percent, and provide improved temperature control," says Lester. "Moving supplies by sea provides container visibility from door to door. Lead times may seem longer, but because air freight requires certain procedures and releases, some of that time balances out."

Globally, Yusen also utilizes centralized Control Towers dedicated to the healthcare sector. The towers manage all shipping orders, operations, and administration, for any global origin or destination location. Rather than individual plants organizing their own freight movement to in-market DCs, the Control Tower manages weekly shipments. The result is a pull, rather than push, approach to inventory.

The healthcare industry still has work to do to enhance logistics and supply chain processes. Fortunately, the sector is finally beginning to look for new opportunities to reduce costs and improve operations.

## In the Spotlight

"The healthcare industry is not as mature in terms of supply chain and logistics as other industries, such as automotive, that have been feeling cost pressure for years," says Shultz. "But with healthcare projected to grow from 18 percent of GDP to 26 percent in the next 20 years, the spotlight is on."

These pressures are likely to cause healthcare companies to shift supply chain strategy to meet evolving customer needs. That, in turn, could mean they rely more on third-party logistics partners.

"Healthcare organizations are looking to the future and trying to identify what their needs will be five to 10 years from now," says Norman Brouillette, group director for Ryder System Inc. "More groups are working together, and looking for 3PLs that can bring to bear lessons learned in other industries where markets have always been tight and cost-conscious.

"Healthcare companies are looking at long-term solutions, and lowering costs because they know costs will continue to rise, and they want to get ahead of that trend," he adds.

For many healthcare companies, the focus is on making the supply chain leaner, while improving visibility.

"Better visibility upstream and downstream in healthcare supply chains is imperative," explains Alleva. "Enabling that visibility allows healthcare companies to gather quality information about their shipping processes. They can monitor in-house performance, as well as keep tabs on their partners, and every supply chain node."

While healthcare companies work to ensure medical professionals have the right tools so they can spend more time with patients — and less time trying to locate the equipment and supplies they need — they are also looking for every possible way to cut costs.

Smarter procurement and logistics processes and practices will go a long way toward easing those pains. ■




# AEROSPACE LOGISTICS

## BUILDING FOR GROWTH

Supply chain improvements, and specialized service providers, keep the aerospace industry flying high.

**by Lisa Terry**

The world has an insatiable appetite for air travel, which is creating massive demand for new planes. Airbus' latest *Global Market Forecast* predicts the need for more than 29,220 new freighter and passenger aircraft, and estimates the world's overall passenger aircraft inventory will double from 17,739 in 2013 to more than 36,500 by 2032.

"It's a paradox: The airline industry is suffering, but there have never been so many orders for new aircraft," says Joël Glusman, president and CEO of The Aerospace Logistics Alliance (TALA), a Miami-based cooperative that provides supply chain management, freight forwarding, and customs clearance services to aerospace companies.

This backlog, particularly from Middle East buyers, is putting pressure on the aerospace industry to produce planes more quickly, efficiently, and profitably. Aircraft manufacturers are challenged to make lighter aircraft with lower fuel consumption, using materials sourced from a geographically diverse supplier base. Technical challenges are also delaying some production timetables, causing a ripple effect through a carefully planned schedule of costly incoming parts timed to keep inventories low.

A related demand is to keep the planes flying—servicing and managing replacement parts across an increasingly global footprint. Those pressures are elevating supply chain management to an unprecedented status within aerospace organizations, which have historically emphasized research and development, and manufacturing. They're also prompting aerospace companies to hire third-party logistics (3PL) providers to manage inbound materials movement, production, maintenance, repair, and overhaul operations.

"The aerospace supply chain is five years behind the automotive and high-tech industries," notes Erik Goedhart, senior vice president, aerospace for Kuehne+Nagel, a global supply chain solutions provider. "So 3PLs are trying to adapt automotive and high-tech supply chain concepts for the aerospace industry. Regulation is a key topic in aerospace; however, companies often use it as an excuse not to make improvements in the value chain."

## Battling the Backlog

"During the next few years, 20 new aircraft will be in circulation that are not built yet," says John Brennan, managing director, government sector at UPS. The parts to build those new planes are sourced from more than one dozen different countries, increasing lead time, complicating customs clearance, and challenging supply chain managers to match the right parts and orders to the right modes and trade lanes in time to meet narrow delivery windows.

"This shift is stretching the elasticity of the aerospace supply chain," Brennan adds.

Signs of progress, however, are emerging. In April 2013, Airbus broke ground on a $600-million A320 Family jetliner final assembly line in Mobile, Ala., which will become the global company's first U.S. production facility. Aircraft assembly is scheduled to begin

**Airbus recently established an A320 Family jetliner final assembly line in Mobile, Ala., the global aircraft manufacturer's first U.S.-based production facility.**

in 2015, with the first delivery targeted for 2016. The Gulf Coast location will enable parts to be delivered from global locations via deep-sea vessels, in addition to other modes. Airbus' move spurred its suppliers to also open facilities in the area, which is increasingly becoming a hub for the aerospace and defense industries.

Meanwhile, Boeing is deciding where to manufacture its 777X aircraft, which it launched at the 2013 Dubai Airshow with a record-breaking 259 orders from four customers across Europe and the Middle East. The 777X's design includes a new composite wing. Production is set to begin in 2017, with first delivery targeted for 2020.

### Streamlining Parts Flow

Both new and current model production lines require improved processes for the inbound flow of parts. "Aerospace companies are striving to streamline movement, and continuously synchronize the manufacturing process," says Kim Wertheimer, executive vice president of the global industrial sector for supply chain management company CEVA Logistics. "Previously, those processes were batch- or project-oriented."

One improvement involves determining how to move the parts. While most aircraft components are parcel-size, some can scale up to an engine or wing, which requires specialized handling, racks, and conveyances. Given tight production timeframes, and the nature of the business, aerospace companies make heavy use of air freight to move components, taking advantage of its value, lead times, and contract terms. But they also use some ground, rail, and steamship transportation, which requires careful coordination, particularly as points of origin grow more diverse.

"Like automotive companies, aerospace companies have moved some sub-assembly activities to low-cost countries," says Wertheimer. "They've extended their supply chains to 3PLs to support the manufacturing process, and handle staging, kitting, and other tasks."

Those other tasks include providing visibility to the order and part level, determining total delivered cost, and synchronizing the flow of material from suppliers using tools such as warehouse, event, and transportation management systems.

As manufacturing supply chains become more disciplined, inbound materials movement is becoming less urgent and more synchronized, with supply chain managers monitoring flow and communicating with suppliers to address exceptions.

In addition to moving parts cost effectively, aerospace supply chain managers must meet increasingly tight delivery time windows. "In the past, meeting delivery schedules was easy because companies held one month's supply of buffer stock close to the plant," says Goedhart. "Today, however, the increased production tempo results in less stock held at the plant or with vendors. Aerospace companies are more frequently requesting that their 3PLs manage vendor relationships and inbound logistics.

"It's helpful to develop close relationships with those suppliers, so they can anticipate issues and create contingencies based on past experience," he adds.

Supply chain managers must also contend with the increased risk for disruption that accompanies global sourcing. When a volcanic eruption in Iceland disrupted air travel in 2010, for example, parts suppliers had to reroute orders through southern Europe via ground, then get them in the air. That risk is being compounded by a move to reduce the number of suppliers from hundreds to dozens. Take into account additional tiers, and the total supply base can number in the thousands. The same is true of logistics providers: aerospace providers want to work with only one or two that understand the industry's specialized needs and can handle the scope.

### Borrowing from Automotive

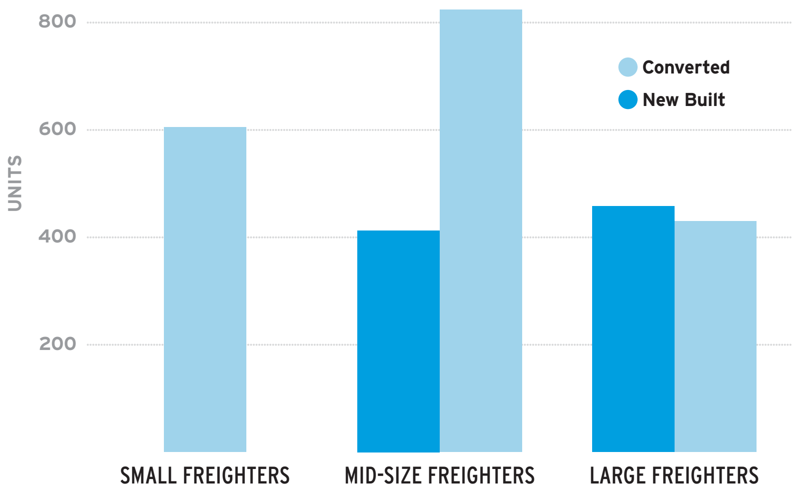
One inbound materials management idea aerospace is adapting from automotive is creating a vendor village: building a warehouse at the front of the production line where goods are combined into multifunction units designed for each aircraft in the queue. This strategy reduces stock in the value chain by 15 to 20 days.

"Besides cost savings, the big benefit is that once an aircraft is produced, changes to parts can be implemented more rapidly because of the small amount of stock in the supply chain," says Kuehne+Nagel's Goedhart. "This strategy is intense to manage, but far more flexible."

Northrop Grumman Aerospace Systems is employing another strategy new to the aerospace industry. The military contractor tackled its materials flow system by reorienting its Joint Strike Fighters and F18s supply chain to pull, rather than push, inventory. In the past, the company would send a purchase order to a supplier and

## FLIGHT PATH: A GROWING MARKET FOR FREIGHTERS

**About 870 new aircraft will be required over the next two decades, driving aerospace companies to reconfigure their supply chains to handle demand.**




Source: Global Market Forecasts 2013-2032, Airbus

specify delivery dates for parts. A subcontractor could then deliver, say, 48 center fuselage assemblies at regular intervals over the course of one year.

But production didn't necessarily move at that pace: schedules may accelerate, or fall behind. Nevertheless, those parts would keep coming, building up inventory if they were not needed or slowing production if the line had to wait for the next shipment.

Using the Material Acquisition Pull System, Northrop Grumman Aerospace now provides suppliers with a minimum and maximum level for inventory, and they are free to deliver as they want in order to stay within those parameters.

"The pull system has been a huge success," says Wink Williams, director of goods movement for Northrop Grumman Aerospace Systems. "We don't have to worry about big inventory fluctuations, and buyers no longer need to issue change orders with new dates."

### Keeping Planes Flying

Once aircraft are inducted into service, it's up to carriers and their partners to maintain their aircraft, including regular and emergency parts replacement. That's a costly undertaking, adding to the many other pressures currently impacting airline carriers: consolidation of major players, rising debt, pressure from low-cost airlines, depressed cargo demand, the rising incidence of natural disasters and other disruptions, and escalating costs. Carriers also are looking to trim costs and streamline spending as much as possible.

With the advent of deregulation, airlines began outsourcing some parts of their operation not considered a core competency, and that trend is now escalating. Many airlines began by entrusting maintenance, repair, and overhaul (MRO) to OEMs or MRO specialists, followed by catering, aircraft loading/unloading, and fueling. Some are even spinning off their own MRO units into independent companies.

When outsourcing MRO, as well as the logistics around MRO parts and other components, airlines are seeking global reach, speed, visibility, 24/7 service, a single point of contact, and management of spare parts inventory including reverse logistics. Airlines only make money when

## EXTREME AEROSPACE MAKEOVER: WAREHOUSE EDITION

When Northrop Grumman decided to consolidate its Integrated Systems and Space Technology units into Northrop Grumman Aerospace Systems in 2009, it had some housecleaning to do. The company had squirreled away $98 million worth of inactive inventory alongside active inventory at 18 different locations across and outside its expansive Redondo Beach, Fla., campus – each packed to the rafters. Some inventory was now redundant due to the merger, and some simply unneeded.

When new goods came in, warehouse associates placed them in any available open slot instead of using a logical organization. Pickers would have to visit multiple locations, then bring goods to one central warehouse to complete kits, which may include anywhere from five to 1,000 or more parts, many of them electronic. The excess handling caused loss and damage, and it could take as long as three weeks to get a kit out the door, impacting customers' production schedules.

Wink Williams, who had recently been appointed director of goods movement for Northrop Grumman Aerospace Systems, initiated what amounted to an Extreme Makeover, Warehouse Edition, better known as SWAT – Space Warehousing Accelerated Transformation. The program's

**To reduce inventory without raising risk, aircraft manufacturer Northrup Grumman transformed an obsolete warehouse into a highly optimized facility.**

goal was to reduce inventory without raising risk. That entailed selling off 27 percent of the inventory as surplus goods, and relocating another 21 percent to less-expensive warehouses in the area, then moving half the inventory into a new DC on the campus. The newly formed division was able to exit about 65,000 square feet of warehouse space.

Aerospace Systems created a state-of-the-art facility for the new operation. High-density storage systems – such as vertical lift modules and carousels – enable quick retrieval of goods. A specialized carousel houses electrical parts that need to be stored in nitrogen, and electrostatic discharge floors protect against shock. Part inspection operations were streamlined by installing microscopes that are linked via instant messaging to remote engineers. Inspectors can instantly send the image of a part to an engineer for approval, removing a significant bottleneck that previously required waiting for engineer site visits.

The transformation was a success. Kits that once took three weeks to ship now go out in three days or less. Materials are now centrally stored, easier to find, and maintained at optimized inventory levels. Northrop Grumman Aerospace Systems is able to fill orders using 32 percent less headcount, and employee engagement scores have risen. "It has been a night and day transformation," says Williams.

they're flying, so service providers must be highly responsive and offer exceptional service levels.

"When outsourcing, the main concern of air carriers is not how much it costs, but how the service provider will do what needs to be done," says TALA France's Glusman. "Price comes second to customer service."

One approach to outsourcing is "Power by the Hour" – the concept of paying a flat hourly rate to ensure complete service, support, and replacement parts. Engine manufacturers have long offered this model, and it is now being applied to other types of equipment.

When a plane is grounded and in need of a part, time is of the essence. Getting the part there is the bailiwick of providers such as TALA France. When a customer needs a part, TALA France formulates a solution within one hour, and uses whatever means necessary to deliver the part—via ground, the customer's own airline, another airline's scheduled service, charter, even hand-carried.

The unpredictability means "flexibility is essential," says Glusman. Being able to support both scheduled maintenance and emergency needs requires TALA France to strategically stock parts in the right places, as well as work closely with parts suppliers.

"We're seeing an increase in the number of urgent shipments for aircraft on ground (AOG)," says Morten Jensen, corporate market director, aerospace and defense, for Geodis, a global logistics provider headquartered in Clichy, France. "Because manufacturers are trying to reduce inventories and enable just-in-time delivery, the number of urgent shipments is up." That means service providers are required to offer round-the-clock staffing to address emergencies.

Increasingly, those parts are supplied from manufacturers spread across a broad geography, making quick fulfillment even more complex, and requiring service providers to operate in diverse locations.

## Vital Visibility

The United States and other governments impose strict rules about tracing the location and history of airline parts, down to the serial number. Airline parts are often high-value and have a limited lifecycle, so each one must be monitored and replaced on a specific schedule.

That means reverse logistics is as much a part of the job as distribution—not only moving the parts, but monitoring them through repair, returning them to service, and providing visibility to the carriers.

Tracking expectations also are growing increasingly sophisticated and granular, with more data collection points and greater detail. Air carriers want to be able to search databases by reference, project, or purchase order number. Parts are also growing more specialized, with less ability to share them across airlines, complicating inventory management.

RFID and GPS are emerging as options to increase visibility and tracking of aircraft components. TALA France, for example, is considering RFID for parts tagging. CHEP Aerospace Solutions, which offers management of unit load devices (ULD) and galley carts as well as MRO for non-flight-critical equipment, is in the midst of a two-year project to test GPS devices in ULDs. The devices will supplement the container tracking currently attained through flight load sheets sent via EDI to a central tracking location in Bangkok.

Cargo airline Cargolux is currently testing GPS for high-value containers of shipments such as pharmaceuticals. "Visibility is not limited, but it is based on human activity," says Henrik Ambak, vice president, ground services and commercial IT at Cargolux. "But GPS can be used without a human touching the shipment.

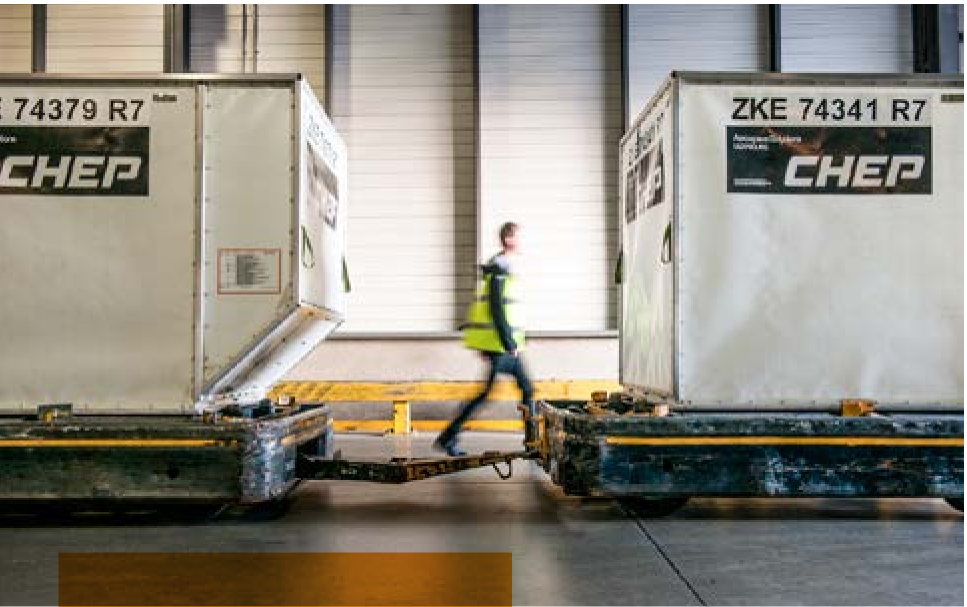
The confluence of all these changes is challenging aerospace logistics. "In the past, standardized solutions were the norm," says Geodis' Jensen. "Today, aerospace companies require tailored solutions. No two companies are alike."

On the production side, some aerospace companies still struggle to attain the same visibility into order status with Tier 2 and Tier 3 suppliers as they have with Tier 1 suppliers.

"As they transform into end-product integrators, large OEMs largely contract out the supply risk to their Tier 1 suppliers. As a result, they have lost visibility into the more distant part of their supplier network," says analyst firm KPMG in its 2013 *Global*

**Boeing's new 777X aircraft has already broken records for advance orders, driving the manufacturer to consider new production locations.**

*Aerospace & Defense Outlook*. Some signs of change are emerging, however. "We are seeing much more integrated information flow, even to the lower tiers of supplier," notes CEVA's Wertheimer.




**CHEP Aerospace Solutions provides services to help aviation companies manage ULD pooling, short-term logistics challenges, and repair and maintenance needs.**

## Outsourcing ULD Management

One component most aerospace companies have seen fit to outsource is ownership and management of ULDs, such as containers and pallets for both freighters and passenger aircraft. CHEP Aerospace Solutions created a global network to repair this equipment at sites across the globe. Baggage containers are damaged an average of 1.5 to two times annually.

When airlines managed these repairs themselves, they would have to fly an empty, damaged container to a central location for repair. CHEP offers on-location repair, as well as asset pooling: Purchasing an airline's ULD or cart assets, then maintaining and managing them for a fixed monthly fee.

"Cargo can experience volatile demand," says Dr. Ludwig Bertsch, president of CHEP Aerospace Solutions. CHEP's solution helps balance that volatility, and reduce overall inventory while ensuring ready availability.

One airline reaping such benefits is Cargolux. "Carriers need to decide what core competencies to keep in house, and what they can safely outsource to reap the financial benefits of pooling equipment," says Cargolux's Ambak.

In 2009, the airline ran parallel studies comparing outsourcing to CHEP against substantially enhancing its in-house program for managing ULDs. The outsourcing route was deemed more beneficial. Since then, the move has delivered on Cargolux's financial goals and solved many equipment management problems without introducing new ones, Ambak says.

Cargolux avoids using revenue-generating space to move specialized container equipment, and experiences lower safety stock levels resulting from pooling. "Instead of three airlines, each with 10 pallets at one location, you only need 15 pallets as safety stock, reducing the total asset investment required," Ambak says.

## Lighter Planes, Lower Fuel Costs

A priority for most airlines is reducing their number-one cost: fuel. Because weight increases fuel consumption, carriers are focused on shifting to lighter planes, often through the use of composite materials.

The shift toward lighter weights is driving CHEP Aerospace Solutions to pursue new materials for its ULDs. The company's Innovation Center in Orlando, Fla., is testing materials that adequately balance weight, strength, cost, and serviceability. Composite tends to weigh less, but also offers less damage protection, and can cost twice as much. In addition, aluminum's malleable properties make it easy to repair.

The same can't always be said of composite materials. In January 2014, CHEP began testing a pallet that weighs 143 to 150 pounds, compared to the 245- to 254-pound weight of a standard pallet. "The new pallet would offer a tremendous benefit," says Dr. Bertsch. "Carriers could save weight and load more cargo."

But composite parts have not yet cleared the necessary financial hurdles. "To date, fuel savings are outweighed by higher purchase and maintenance costs," says Ambak.

The other challenge is in transitioning from one set of ULDs to another when airlines are adopting at different rates, requiring two separate pools of inventory. As fleets change over, "we need to be able to follow that with spare parts," says Jensen, supporting both older and newer planes as they accumulate flight miles.

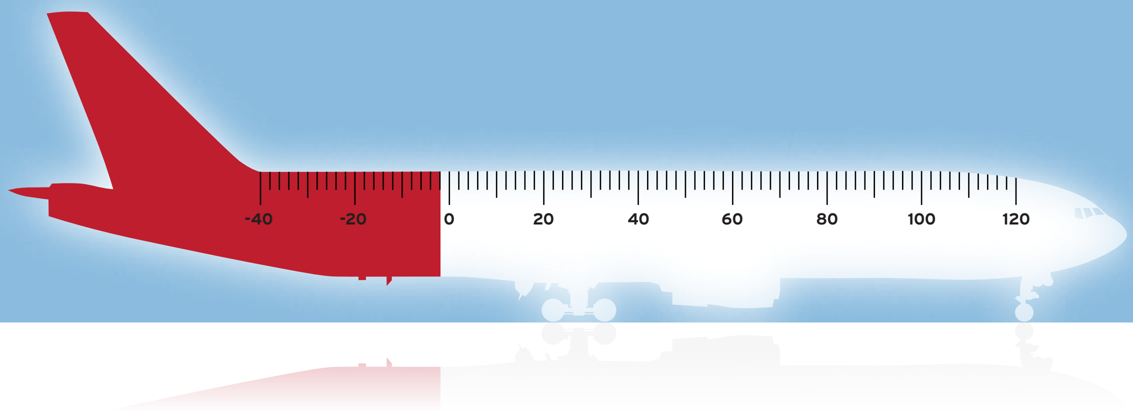
In 2013, for example, Air France signed on as a CHEP customer in a deal that includes ULD management, as well as transitioning the airline to new, lightweight composite containers for its fleet of wide-body aircraft.

## Flying High

All these trends and demands are challenging the aerospace supply chain at every turn – from pre-production all the way through to after-sale service. That's elevating the role of logistics as an enabler.

Aerospace manufacturers, for example, "are looking to supply chain management as a lever to improve efficiency and cost," says CEVA's Wertheimer. "They want to drive velocity to enhance order-to-delivery time reliability, and improve total cost of delivery.

"That includes cutting inventory costs by synchronizing the flow to reduce inventory in the pipeline, decrease buffer stock and excess inventory, and improve the quality of supply chain visibility and on-time performance," he says. "Aerospace companies also want to decrease variability and therefore risk. It's a much more strategic application of supply chain management and logistics." ■




PERISHABLE LOGISTICS:

# COLD CHAIN ON A PLANE

Careful planning for perishable air cargo helps shippers keep their cool.

by Lisa Terry

In perishable logistics, time is of the essence to ensure produce, flowers, fish, and other products reach their destinations while they still offer maximum appeal and shelf life. As a result, many of these goods move via air.

But the potential complications of shipping perishables via air are legion: The trans-Atlantic airfreight space for a produce shipment is booked—but the peppers aren't ready for harvest. Top New York chefs are writing premium Icelandic cod into their menus in anticipation of delivery—but the fish is sitting in a fog-induced backlog at the Keflavik airport. Holland tulips are loaded into the belly of a passenger aircraft—but then the pilot orders several coolers pulled off to free up weight for extra fuel.

The uncertainty inherent in grown or caught product—combined with the potential vagaries of air transport—means managing perishable logistics demands specific expertise. "The greatest challenge is to maintain the cold chain, which varies from product to product," says Alvaro Carril, senior vice president of sales and marketing for LAN Cargo, a cargo airline based in Santiago, Chile, and a subsidiary of LAN Airlines. LAN Cargo transports salmon and fruit from Chile, asparagus from Peru, and flowers from Ecuador and Colombia to the U.S. market.

"Transporting salmon is different than moving flowers, and both commodities require special and differential treatment," Carril notes.

Perishable logistics is an evolving science, as changing consumption patterns, variable regulation, rising customer expectations, and shifts in services converge to create a complex and changing supply chain.

## Pineapples on Board

Perishables shippers use both passenger aircraft and freighters to speed goods to their destinations, according to market needs, the nature of the commodity, product margin, and individual preferences.

Passenger flights are generally more frequent, less expensive, and more widely available, but they require adherence to tight timetables, and goods may get bumped at the pilot's discretion. Freighters offer better temperature control, fewer inspections, and additional capacity, which is particularly valuable for large quantities of short-season goods. But freighters can be more costly, may fly less often and to fewer locations (depending on the region), and may sit until they reach capacity, endangering perishables.

Air cargo has long competed with ocean shipping for some perishables commodities. One common pattern is for the beginning-of-the-season harvest to ship via air so it's first to market, followed by ocean shipping as the full season gets underway, says Markus Fellmann, global vice president of Hellmann Perishable Logistics, a Miami-based unit of third-party logistics (3PL) provider Hellmann Worldwide.


**Cargo airlines offer tighter temperature control, fewer inspections, and more capacity than passenger airlines, which also carry the risk of a pilot removing shipments from a flight if the aircraft exceeds the proper weight limit.**


**Some produce shippers choose air freight over ocean shipping because slow-steaming initiatives have increased the transit time for steamship journeys, putting perishable cargo at risk.**

Pineapples and stone fruit, with their long shelf lives, have been shippable via ocean for some time. Today, scientific advances – such as specialized packaging that extends produce lifecycles – are enabling additional commodities to move via steamship. For example, Chiquita Brands International subsidiary TransFresh Corporation creates controlled-atmosphere containers and techniques that are driving interest in ocean transport for other types of fruit.

Other perishable goods are also more commonly shipped via ocean. Between 30 and 40 percent of the volume of cut flowers from Colombia, and 20 percent of those from Kenya, could move via steamship within five years, according to some estimates.

But, steamship lines' efforts to reduce fuel consumption by traveling more slowly has forced some perishables commodities back to air cargo. Trips from Holland to New York that once took seven to eight days can now take 12 days on the water.

"In the past, we moved a lot of bell peppers in sea containers to the United States, but in the past five years, the volume has decreased," says Marcel van der Pluijm, account manager, United States and Canada, at Global Green Team, a fruit and vegetable trading company in Maasdijk, Holland. "Transit times are too long by steamship, so 99 percent of peppers move by air."

The air or sea choice comes down to what value a producer is seeking to deliver—and it is often a matter of taste versus price. "A mango shipped by air has a different taste and quality than one shipped by sea," says Uta Frank, product manager, perishables, for Lufthansa Cargo, the Frankfurt, Germany-based air cargo subsidiary of Deutsche Lufthansa AG.

## A Fleeting Concern

Thanks to increased air cargo volumes for commodities such as flowers, perishables supply chain executives report a slow but steady rise in air cargo use. But one development with the potential to significantly impact perishables movement is the transition of airline passenger fleets to new, more environmentally friendly models. Fewer available widebody aircraft threatens to reduce cargo capacity and dimensions, impacting perishables shippers reliant on those routes.

Another factor is the ongoing transformation in both product growth and consumption. In Europe, for example, "domestic production in North America and Latin America is a big challenge and threat to overseas exports from Europe," says van der Pluijm. That has European producers eyeing emerging markets such as China and India.

The increasing globalization of perishables comes with some trade-offs. Food safety incidents that once would have been locally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contained now have the potential to spread across the globe. Over the past few years, for example, a "Fish Farmageddon" has been underway among salmon farms due to Infectious Salmon Anemia (ISA) virus, which poses no proven health risks to humans, but kills fish.

The virus is threatening native salmon in countries that import it, leading to bans. Chile reportedly lost $2 billion and more than 25,000 jobs during an ISA crisis in 2008. Although the country has mostly recovered, the virus re-emerged there in 2012.


Seafood shippers must take precautions to prevent the spread of foodborne illness.

To try to control foodborne illness, the United States passed the Food Safety Modernization Act of 2010, which gave the Food and Drug Administration more power over safety and recalls. Traceability requirements are expected to follow. In the meantime, the produce industry formed the Produce Traceability Initiative, a voluntary, industry-wide effort to maximize the effectiveness of existing track-and-trace procedures. "We all eat, and we want our food to be safe," says Christopher Connell, president of Commodity Forwarders, a Los Angeles-based freight forwarder specializing in perishables.

Other governments have also begun to issue regulations, but different countries and jurisdictions adhere to different standards, complicating compliance.

One step to safety is guaranteeing the cleanliness of food-grade containers. It is critical that companies packing the containers have processes in place to ensure adherence to cleanliness standards. "The industry is proactive when it comes to cleanliness, because it helps reduce claims," says Fellmann. "And no one likes to deal with claims."

Pests and parasites are an important concern, with some countries requiring fumigation of certain import products. Produce, for example, is inspected by the U.S. Department of Agriculture (USDA), which sends any unknown insects it discovers to a lab for analysis. Different countries have different policies about what bugs are acceptable.

The safety of perishable goods themselves is not all that is at stake. Homeland Security regulations that began requiring 100-percent inspection of all passenger aircraft cargo in 2010 include perishables. But inspecting cargo takes time—and time is not on the side of perishable goods. So instead of waiting for government inspection, a number of freight forwarders have attained the credentials required to inspect and certify that perishables shipments are free of devices of terrorism. This requires them to invest in worker training and certification, develop secure processes, and implement physical security systems.

Peninsula of Boston, for example, is an independent transfer point for fresh food distribution in the Northeast, and a Certified Cargo Screening Facility that inspects fresh fish traveling on passenger aircraft.

"The cargo volume is too great for the airlines to handle," explains Joseph O'Neill Jr., vice president of business development at Peninsula. The company also acts as an indirect air carrier, receiving, booking, packing, sealing, and handling documentation for seafood wholesalers.

## Streamlining Clearances

Perishables handlers take great pains to ensure customs clearances go as smoothly as possible, so goods don't sit idle. Experience and long-term relationships with customs go a long way toward making that happen.

One location that has expediency down to a science is Miami, where about 90 percent of imported flowers enter the United States. The majority of those flowers come from Colombia and Ecuador. An average of seven daily flights, six days per week, carry


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nothing but flowers into the United States, says Christine Boldt, executive vice president of the Association of Floral Importers of Florida, a Miami-based trade group. Steamships have traditionally been used only for major events such as Valentine's Day or Mother's Day.

### One for All

Due to this massive volume, U.S. Customs and Border Protection has given the port's air carriers authority to act on importers' behalf, managing the entire planeload as one shipment instead of handing off clearance responsibilities to the 30 or 40 brokers that may be involved in a single aircraft's payload.

"The air carriers prepare the paperwork and sampling, and show the product to customs," says Boldt. "A farm may ship to several customers, so instead of inspecting multiple times, customs can do it once." Customs operates around the clock, and the USDA also offers extended hours to speed processing.

Incoming freighters travel directly to coolers at Miami International Airport within minutes of landing. LAN Cargo, for example, operates a 430,000-square-foot cold storage facility on site, with 161,460 square feet acclimatized and outfitted with specialized equipment to handle perishables. The company has invested $8.3 million in cold infrastructure since 2010.

Neighboring the Miami airport facility are two fumigation plants, and importers are all located within five miles of the airport so they can quickly come pick up goods. At least 25 ground carriers specializing in flowers are based in the area, all set up to speed deliveries to their destinations across the United States. Most flowers travel via the boxes they were packed in, but supermarkets and mass merchants require that shippers open the boxes, cut and package the flowers, then place them in standup bucket boxes.

**In addition to maintaining temperature and humidity requirements, flower shippers may have to allow time to repackage shipments being delivered to supermarkets.**

The entire trip from South American farm to North American retailer can take as few as four days. The speed is essential to provide a positive flower purchase experience and drive repeat purchases.

When a harvest or fishing season begins, companies in the perishables supply chain are eager to be first to market. That means stiff competition for limited capacity in the bellies of passenger aircraft, or coordinating shipments from enough farms or producers to fill a freighter.

"To accommodate peaks, we handle full charter, and we negotiate block space agreements with certain carriers for daily, weekly, or monthly allocations," explains Fellmann. Backhaul capacity may be used to deliver consumer goods or electronics to destinations that supplied flowers, fish, or produce.

Perishables customers want logistics partners that can ensure access to capacity, cool facilities in as many steps of transport as feasible and affordable, and the ability to move goods rapidly and on time.

Another growing demand is for end-to-end service. With sourcing from more diverse locations, perishable supply chains have become crowded; shippers are seeking service providers who can manage multiple suppliers and/or provide a range of services under a single banner.

Kuehne + Nagel, a global third-party logistics provider, for example, recently opened an accredited airfreight station at New York's John F. Kennedy Airport to ensure seamless cold chain integrity for temperature-sensitive air cargo. That step enables the company to manage all logistics and brokerage tasks so the shipper receives one invoice, rather than several.

Experience is critical to understanding the characteristics and needs of each commodity, so many forwarders, airlines, and other service providers train and employ staff devoted specifically to perishables. In June 2012, for example, Lufthansa Cargo formed a dedicated team based at Perishable Center Frankfurt (PCF), Lufthansa's major hub for perishables. PCF is a storage facility equipped with product-specific, temperature-regulated storage and processing capacity. The facility also offers freighter parking directly adjoining the facility to reduce time spent on the tarmac, where product is most likely to be exposed to warm temperatures and weather.

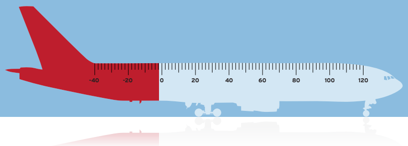
### A Plum Job in Packaging

The biggest challenge in perishable logistics is "maintaining high-quality product and service levels," says van der Pluijm.

Proper packaging is essential to ensure perishables survive the hand-offs and temperature variability involved in air import and export. Packing strategies might include specialized boxes and packing materials, and use of gel packs, thermal blankets, dry ice, and other materials. Fresh fish is typically packed in polystyrene boxes with gel packs, for example.

Some goods need to be pre-cooled for transport to withstand flying conditions and extend shelf life. Hothouse peppers, for example, must be cooled from about 80°F down to 54°F.

One potential area for improvement is standardization of box



sizes. In floral shipping, for example, large-headed roses require a different box size than carnations, and shippers sometimes specify a particular type of box, making it challenging to efficiently palletize shipments.

On freighters, perishable produce often moves via aluminum trays resembling cookie sheets, which are slid into pallets; on passenger aircraft, goods must be packed to fit into unit load device (ULD) containers that conform to the shape of the plane's belly. When it comes to containers, airlines "have under-invested in consumable perishables and over-invested in pharmaceuticals," where they can charge higher fees, says Connell.

Another challenge is variability among ULD containers. "Depending on how and when they're built, and whether they have been repaired, ULD containers can vary in weight," explains O'Neill. "Shippers want to maximize space capacity, but if they are five to 10 pounds over the weight limit, the airline can refuse the shipment or require them to remove product." Shipping loose boxes is much more costly per-pound than full containers. Packaging, gel packs, and ice also add weight, impacting margin.

For Gerawan Farming, which grows stone fruit and grapes in Fresno, Calif., under the Prima name, quality is a defining element of its brand. So the company designed its own single-layer cardboard container that offers 47 percent more strength than two-layer boxes. "We want to avoid jostling and bruises," explains Dan Cuevas, plant facility manager for Gerawan.

## Blueberries in January?

Retailers have long sourced perishables from across the globe, but growing consumer incomes and appetites are driving the increasing diversification of produce markets, both as sources and destinations. Shoppers want more and better options, and they want them year-round.

In the United States, for example, blueberry availability was once confined to the North American growing seasons. But in the late 1980s, Chile began harvesting blueberries from October through late March, with much of the output going to North America. Peru and Argentina also produce berries for the U.S. market, and climate-controlled storage means the fruit is often available year-round. Similarly, in the United States' off-season, peppers may come from Mexico, Israel, or Spain.

The FDA estimates 15 percent of the U.S. food supply is imported, including half of all fresh fruits, 20 percent of fresh vegetables, and 80 percent of seafood. Miami is a leading inbound port for produce and flowers; other major ports include Los Angeles, Houston, and Atlanta. Many outbound produce shipments export from California and Washington.

Globally, the rising middle class in locations such as China and India is seeking luxuries such as imported perishables. "The trend started with the Middle East 10 years ago," says Jur de Graaf, general manager, export perishable logistics for Kuehne + Nagel, a global transportation and logistics company based in Switzerland. "Today, volumes are 10 to 20 times what they were then, and there is also a larger variety of produce, including strawberries, tomatoes, and peppers." Population growth in general is also a factor.

Plant scientists have also devised ways to encourage better yields from plants, resulting in greater volume that can be sold into more markets.

### Keeping Tabs on Tomatoes

Like all shippers, perishables companies are seeking improved information on the location and condition of their precious cargo. That's prompting carriers and logistics companies to beef up IT, enhance their portals, offer improved logger devices, and even develop their own mobile apps.

"The number of touchpoints is increasing, and shippers want to gather more data at those touchpoints," says Connell.

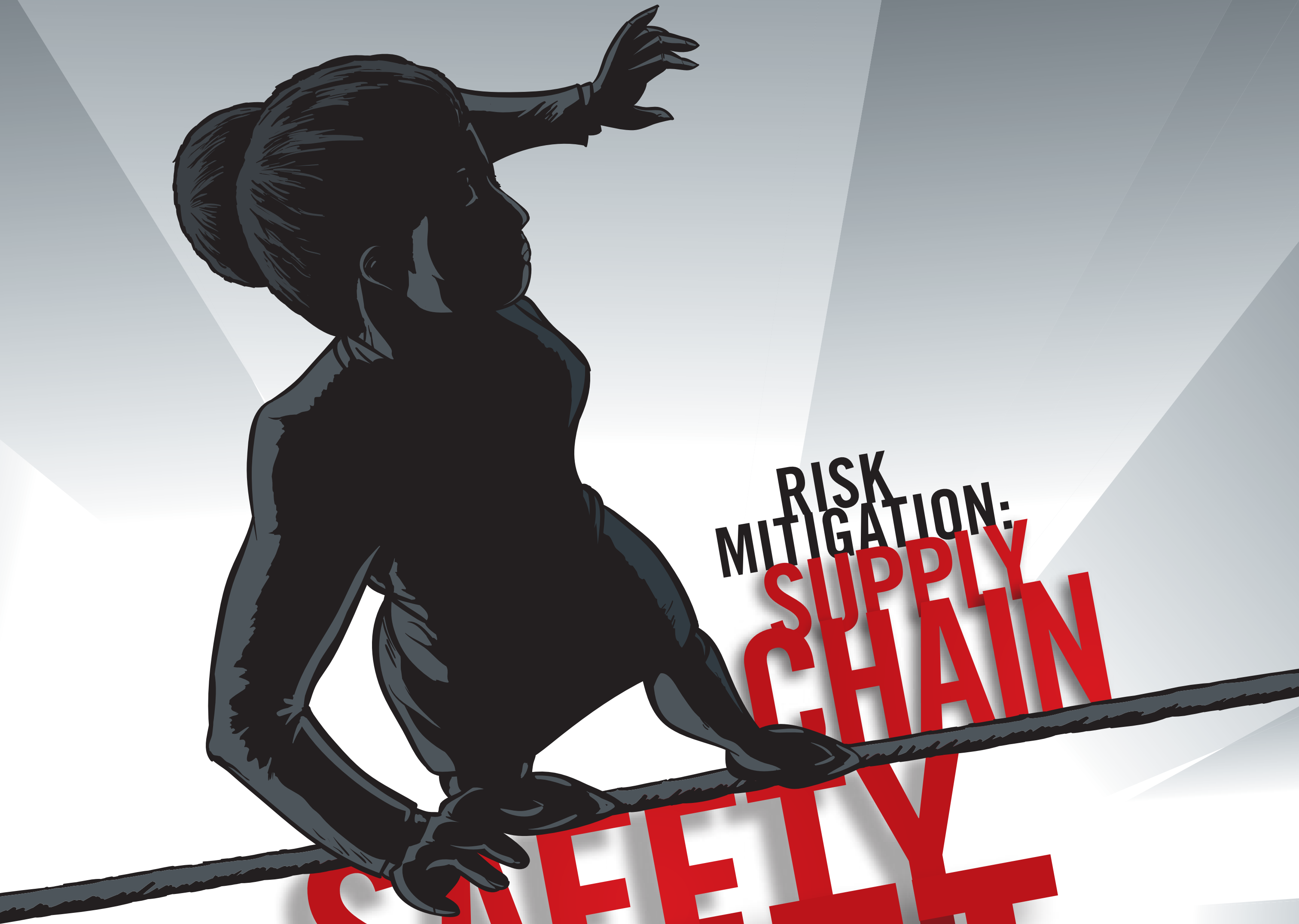
Shippers also typically want reports on temperature, humidity levels, and sun exposure. "The industry is struggling to find uniform metrics, so companies are establishing their own benchmarking," he adds.

Many seafood shippers want to be able to access their entire inventory as they're selling. "They want to see exactly what products are available in real time, including whether the product was loaded on the plane, and its projected delivery time," says O'Neill.

Logistics providers are investing in meeting shippers' visibility demands. Hellmann Perishable Logistics developed the Smart Visibility Tool, a sensor placed in the frame between the aircraft door and the container to monitor temperature, movement, location, and door openings—then communicate that information via GPS and satellite through the shipment's journey.

Lufthansa Cargo unveiled a similar device in December 2013. Shippers can place a lightweight tracker in any consignment, track the shipment via a portal, and return the device by mail after the goods have been delivered. The transmitters switch off automatically during flight. Lufthansa is working to add sensors to the device to record conditions, in addition to location.

As long as consumers have an appetite for perishable products that can only be sourced in faraway destinations, air cargo will play a key role in the supply chain. But logistics professionals need to stay cool under the pressure of moving perishable goods quickly and safely through agile and flexible supply chains.



RISK MITIGATION:

# SUPPLY CHAIN SAFETY NET

**Meeting demand without overinvesting in safety stock can be a real balancing act. Risk mitigation strategies protect shippers from landing hard when supply chain disruptions occur.**

by Joseph O'Reilly

In a near-perfect world, supply and demand would wobble and waver, then—in harmony with historical context and predictive hedging—find some semblance of balance. But when an unforeseen force topples formalities, there's no quick fix for chaos.

Consider the litany of natural disasters that have sent shockwaves through supply chains over the past few years: Iceland's Eyjafjallajökull volcano eruption in 2010; the earthquake and tsunami that struck Japan in March 2011; severe floods in Thailand that followed four months later; and Hurricane Sandy in the United States in October 2012. Then add the social and economic dis-ease spread by financial contagions—draconian realities that still resonate in many parts of the world.

Global supply chains are fraught with risk. Supply and production lines span continents, and are pulled so taut through continuous optimization that any blip of the radar threatens to snap routine, and cause disruptions. That's the cost of doing business.

## MITIGATING CIRCUMSTANCES

"Companies have been optimizing their supply chains, offshoring for cost purposes, and keeping inventories low for just-in-time efficiency," says Perry Rotella, group executive of Jersey City, N.J.-based information services firm Verisk Analytics' supply chain risk analytics business. "All that builds risk into their networks. Companies can't optimize without factoring in these elements."

The greatest defense against any unseen exception is knowledge. Even a scant understanding of a supply chain's risk exposure can help companies make necessary preparations before the inevitable eventually happens.

According to Carlos Alvarenga, principal in professional services firm Ernst & Young's operations finance and risk practice, supply chain risk management falls into three buckets:

**1. Physical mitigation.** Think safety stock, multiple suppliers, and excess capacity. A good example is a car lot, which hedges against demand volatility. It's the most common tactic of the three.

**2. Analytical mitigation.** This category takes the shape of sales and operations planning, forecasting, and collaboration. It often places an emphasis on control towers and real-time visibility of transportation and materials movement. This application is widely used, but less so than physical risk management.

**CEVA Logistics' global operations include control towers comprised of 10 to 20 multi-lingual workers who provide 24/7 visibility to ensure facilities run smoothly and respond to disruptions.**

**3. Financial mitigation.** This approach is used by a smaller set of companies, and deals with supply chain risk from a completely different perspective. It addresses financial risk problems, as opposed to disruption or physical flow issues.

Most companies are well-versed in managing the physical part of the supply chain. Academic supply chain curricula cater to this perspective more than the financial side, says Alvarenga, who also serves as senior research fellow at the University of Maryland's Robert H. Smith School of Business.

All it takes is one glitch in a complex, demand-sensitive supply network to completely halt production. There's no surefire way to safeguard supply chains from these types of exceptions.

Natural hedges are common ways for companies to allay risk. But this presents challenges for supply chains that are running lean with less inventory.

"Shippers are trying to drive more efficiency in their supply chains. Historically, they have expanded their sourcing, manufacturing, and distribution, which has created a fragmented supply chain," explains Kim Wertheimer, executive vice president, strategic development, for Netherlands-based global third-party logistics (3PL) provider CEVA Logistics.

When the economy tanked in 2008, shippers contracted. They rationalized networks to be more efficient, drive velocity, reduce costs, and improve service quality. With fewer redundancies, exposure to risk only grew. When a global catastrophe the likes of Japan's earthquake and tsunami struck, supply chains were greatly impacted (*see sidebar, page 168*).

This event had a concussive shock on U.S. industry, notes a 2011 Congressional Service Report titled *Japan's 2011 Earthquake and Tsunami: Economic Effects and Implications for the United States*.

"Japan plays a major role in global supply chains, both as a supplier of parts and as a producer of final products," the report states. "In this age of just-in-time production processes, even a small disruption in the provision of a single component can wreak havoc on an entire product line.

"Japan's production of automobiles, semiconductors, and electronics is likely to be affected the most," the report notes. "But companies in the United States that rely on Japan for critical components such as electronic parts, batteries, or transmissions for electrical vehicles also will be affected."

The Japan disaster affected production directly. The 2010 volcanic eruption in Iceland, on the other hand, created an ash cloud that specifically disrupted transportation. Shippers moving high-value and time-sensitive product were forced to find airfreight alternatives, chartering flights and re-routing shipments around the European air space. Few, if any, contingency plans could have addressed such billowing circumstances.

## ANY BUMP IN THE ROAD

All it takes is one glitch in a complex, demand-sensitive supply network to completely halt production. There's no surefire way to safeguard supply chains from these types of exceptions. But companies can minimize risk by taking certain steps.

"Shippers may maintain dual sources of supply where it makes sense economically," says Wertheimer. "But they also need to consider the robustness of their transportation network, and ability to leverage multimodal alternatives—air, ocean, or ground—as well as various routing options."

Nearshoring is another possibility. While locating production closer to demand can reduce transportation costs and increase demand responsiveness, risk aversion shares equal billing.

"Nearshoring enters the discussion as well, because it shortens the supply chain and reduces risk and volatility," Wertheimer says. "It becomes a matter of balance."

## ALL ALONG THE CONTROL TOWER

Shippers also turn to third-party logistics and forwarding partners as an extra measure of security, recognizing the advantages they deliver beyond just execution.

"When companies are concerned about supply chain risk, they are more thoughtful about pre-positioning inventory or materials in certain areas—even to the extent of using CEVA's network to position materials closer to the point of consumption," says Wertheimer.

But the logistics sector is developing capabilities beyond that. Analytical mitigation is an intermediary's domain. When companies adopt more sophisticated supply chain best practices, they often rely on value chain partners to provide cover in terms of facilities, IT systems, and labor.

The supply chain "control tower" has become a widely bandied buzzword, providing a technology foil to fourth-party logistics and lead logistics provider models. In CEVA's world, the concept means having dedicated teams working closely with customers to manage material flows through its systems and processes.

For example, CEVA set up shared customer operations in Europe, North and South America, and Asia. Control towers comprise anywhere from 10 to 20 multilingual operations personnel, with the concept of being able to provide 24/7 visibility across a common global platform.

"Individuals managing particular accounts can track orders and shipments, respond to disruptions, and communicate back to the customer or supply base," Wertheimer notes.

CEVA sees control towers as an extension of the shippers' supply chain. Sometimes, where there is critical mass and it makes sense, the 3PL will establish customer-specific facilities that might be co-located with distribution operations. For example, in the automotive sector, CEVA operates a dedicated control tower on site at a crossdock with one of its large manufacturing customers.

Access to this type of visibility and centralized control allows shippers and service providers the latitude and agility

to react to demand signals or disruptions more quickly. But it's not just a matter of handling the exceptions. Supply chain variability happens daily—from weather to flight delays to supplier production and quality issues.

"Shippers can utilize our networks, teams, and control towers," Wertheimer says. "In some cases, we set up response groups with a customer or in specific areas, to manage through the disruption."

The best protection against supply chain risk is developing some sense of probability. Technology has evolved to a point where companies can mine a lot of useful data that they can juxtapose with historical context to predict the likelihood of disruptions.

Companies such as Verisk Analytics help firms assess and simulate potential risk exposure. "We work with companies to model their network, provide the ability to look at different scenarios, then apply risk elements," says Rotella. "We can help them better understand the value at risk for each supplier, route, and location."

### PLANNING FOR THE UNPREDICTABLE

Part of the challenge companies face is that all risks are not equal. Leading indicators often precede weather and even political disturbances, allowing companies to plan for problems. But some natural disasters and weather phenomena are 100-year events. "What's the business case for planning such a contingency?" asks Rotella.

Companies have to compartmentalize their exposure, look at risk holistically, then prioritize accordingly. Rotella cites a pharmaceutical manufacturer that Verisk is currently working with to help safeguard product flow from point of supply to demand. Special considerations apply for moving time- and temperature-sensitive, high-value medications. Determining how to re-route shipments and keep flows moving is no small challenge.

"December poses a risk because of holiday shipments," explains Rotella. "If a storm occurs during that time, it could cause a disruption. So the pharma manufacturer wanted to use our weather analytics and predictive modeling to get out in front of these problems.

"Look at the Iceland volcano eruption," he continues. "Who could have predicted that event? When something like that happens, a company needs resilience in its network to respond."

When companies grasp the actual value at risk, they can begin to take steps to mitigate these concerns. Many turn to physical hedges or logistics partners to provide cover.

Some companies take advantage of predictive analytics to drive competitive advantage. For example, using its climate risk management solution, Verisk helped a roofing manufacturer gain better control over demand planning by looking at extreme weather events.

"Taking into account historical data, we can predict the demand for roof shingles three to six months after a hail storm in Illinois," Rotella says. "We can help the company maximize its revenue by getting product out that is affected primarily by weather."

Verisk has also worked with companies to help them better understand the storm track of hurricanes so they know what to do if they have to shut down operations and move manufacturing from one location to another.

In addition, Rotella's group released a blackout model that estimates the probability of power outages down to the street level based on U.S. power grid mapping.

"The power grid tries to adjust when outages occur," Rotella explains. "Capacity is also an issue. We have modeled a dynamic network that can help companies understand where outages and potential infrastructure issues will occur. This helps many firms with site selection and network optimization."

Whether companies use risk analytics and modeling to cover their assets or seize market share, Rotella sees growing awareness and greater responsibility among

## JAPAN'S SUPPLY CHAIN AFTERSHOCK

Following the tragic and unprecedented Japanese earthquake and tsunami in 2011, supply chains were turned on end. Because of the country's manufacturing legacy, countless industries were impacted as production stoppages rippled outward.

A U.S. Congressional Research Service report delivered weeks after the accident details some of the consequences:

- A Hitachi factory north of Tokyo that makes 60 percent of the world's supply of airflow sensors was shut down. This caused Peugeot-Citroen to cut back production at most of its European plants.
- Two Japanese plants accounting for 25 percent of the world's supply of silicon wafers for computer chips were closed.
- Texas Instruments had to close a factory in Japan for six months, accounting for about 10 percent of its revenue.
- Nippon Chemi-Con Corp.–the largest producer of aluminum electrolytic capacitors used in everything from computers to industrial equipment – shut down four Japanese factories. It was forced to boost production at 10 overseas plants, including factories in Indonesia, Malaysia, and China.
- Nihon Dempa Kogyo–the second-largest maker of quartz components, with a roughly 20 percent share of the global market–relied on operations in Malaysia and elsewhere to compensate for damage to its plant in northern Japan, which assembles quartz components for automotive applications.

Source: U.S. Congressional Research Service

shippers. Many are turning to logistics partners to provide support—although the companies themselves are still accountable to shareholders if a disruption occurs.

### FINANCIAL FLUX

Compared to physical and analytical mitigation tactics, financial risk management is an area that has been largely overlooked in the supply chain—yet it can have a significant impact on corporate finances.

Natural hedging occurs when a company looks at where a product is bought, then stages production close to those markets. Nearshoring and supply chain regionalization may help reduce transportation costs and increase demand agility, but these strategies also help protect against currency fluctuation. Industries that are global, capital-intensive, or have complicated production and distribution models—such as the chemical, semiconductor, automotive, and apparel sectors—tend to be more attuned to these financial exposures.

"In anticipation of potential currency risk, companies sometimes change where they manufacture or distribute goods," says Alvarenga. "They also put hedging teams in place, typically as part of the treasury function."

In the day-to-day fray, shippers and service providers are exposed to different financial risks, especially when it comes to currency exchange fluctuations.

"Gross domestic product rates of major economies are the primary indicators we monitor to determine where trade is occurring," explains Tom Holland, vice president and chief financial officer of FedEx Trade Networks, the global freight forwarding arm of the Memphis-based expediter.

Currency flux generally has a greater impact on transportation than any other function. Warehousing is less of an issue—and, if so, a localized one. It's not the inventory as much as it is the manufacturing. Transportation, accordingly, carries the greatest expense.

### MONITORING TRANSPORT COSTS

"From the supplier side, the exchange risk is not as significant as you think," says Holland. "A lot of forwarding isn't contractual, so pricing is dynamic. It's not unusual for an airline or motor carrier to raise rates because of supply and demand balances. Nor is it uncommon for them to adjust pricing in response to changes in the market."

This contrasts with FedEx's express operations, where all business is contractual. Pricing is less dynamic because it's an asset-based business.

Shippers that use forwarders to procure transportation benefit because the intermediary passes along the lowest rates. At the same time, when an exceptional situation occurs and costs increase, pricing is similarly variable. But it's a balance that generally works in favor of the shipper and consignee.

## TAKING STOCK OF FINANCIAL RISK

Because finance is still a relatively new facet of supply chain management, companies sometimes overlook risk factors buried in the ledgers. Here are three financial exposures companies should keep an eye on:

**1. Embedded costs of risk.** If you have a value chain and every agent in that chain is hedging its risk, the accumulation of hedges can be significant. "For example, in the automotive industry, someone is pulling metal out of the ground, then sending it to a refinery, on to a steel cord maker, then a tire maker, an automotive assembly plant, then finally to the consumer," explains Carlos Alvarenga, principal in Ernst & Young's operations finance and risk practice. "By the time you add up the individual hedges at each point, they can equal 25 percent of the cost of the product."

**2. Economic and financial risk.** Supply chain risks fall into categories–economic and financial. "Economic means the risk is a factor, but hasn't yet been quantified," says Alvarenga. "Financial risks exist and have been quantified."

Using the automotive industry as an example, he cites the way European countries such as Spain were acting before the Eurozone debt crisis. There was a lot of financing and easy capital. Companies were building inventory and production volumes based on an artificial demand signal. As a result, they were carrying a lot of economic risk.

"When the economy turned, that exposure became financial–and all of a sudden, it represented a big problem," Alvarenga explains.

Similar examples exist today, especially related to weather. Some retailers and manufacturers carry a high economic exposure because of this potential volatility. At what point does it become a financial impact?

"Weather volatility, locational risk related to geography, and demand variability in emerging markets are all significant economic costs and risk drivers," Alvarenga notes. "If they become financial–and it's hard to predict when that might happen–companies will have to rethink their supply chains."

**3. Currency exchange risk.** Shippers and consignees need to bear in mind where they are sourcing product from, and how currency instability in those regions can impact costs. "It is naïve for shippers to price their product and transportation in U.S. dollars when they are sourcing from Thailand," says Tom Holland, vice president and chief financial officer of FedEx Trade Networks. "If the currency changes dramatically, their transportation and product costs may go up as well.

"Businesses need to take that into account," he continues. "They must consider how exchange rates can alter the equation. They have to factor in where they are sourcing from."

When FedEx Trade Networks sets a price, it generally tries to cost everything out in the currency of its greatest expense.

"If we're moving a shipment from Europe to the United States using a European carrier, we price it in euros," explains Holland. "Therefore, we don't have a currency risk. The shipper will pay us and we'll pay the major expense—which is transportation—in the same currency."

There is one caveat. Many American companies like to conduct all their transactions in U.S. dollars. This requires greater care and diligence to forecast where exchange rates are trending to ensure they don't significantly alter pricing.

"FedEx Trade Networks may be paying Japan Airlines in yen," Holland says. "When we price it to the shipper, we have to take into account our estimate of how the yen may fluctuate."

That's the same for any company that enters into a contractual arrangement with a forwarder or transportation provider. It has to consider where the shipment is originating from, the currency it is using, and what it thinks the exchange risk might be.

"Most currencies rise and fall, so shippers don't have to worry about it," Holland notes. "China's currency seems to be appreciating historically, so businesses have to take that into account. The euro seems to be better now, but for a while it was unstable."

China's renminbi has been steadily appreciating against the U.S. dollar at such a steady rate it is almost predictable. The euro, by contrast, has been less stable over the past few years, which requires more vigilance.

"We reviewed how our contracts are set up, in what currency, and our risk exposure if the euro starts to unravel, or if some countries leave the euro and go back to their own currency," Holland says.

## A THREE-DIMENSIONAL APPROACH

As supply chain practitioners perfect the science of shipping, they are confronted by one inexorable reality: accidents happen. When they do, all bets are off.

Coming out of the recession, many companies dialed back their supply chains to focus instead on cutting costs and boosting efficiencies. Consequently, supply chains are trending leaner. They are more dynamic and demand-driven. But at what cost?

If there's one silver lining in the turbulent events of the past few years, it is the insights shippers have gained. Companies are well aware of the risks and responsibilities that exist. Now they have to attach value to those exposures, and identify how to best insulate their supply chains from future disruptions.

Alvarenga counsels shippers to look at supply chain risk from all three dimensions—physical, analytical, and financial. They need to step away from the familiar, and pull new levers to really appreciate the risks that exist in their supply chains.

"If companies don't do that, they are missing out," he says.

Balancing precaution with preparedness can help companies avoid being an example of the worst-case scenario. ■

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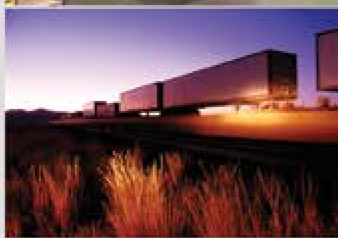

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QUESTIONS & ANSWERS

**Chris Halkyard,** Chief Supply Chain Officer, Gilt

# SETTING THE E-COMMERCE GOLD STANDARD

As chief supply chain officer for flash sales superstar Gilt, Chris Halkyard's bright idea to optimize the company's DC network helped spark supply chain efficiency gains.

**By Catherine Overman**

Most supply chain executives work to avoid surprises. But for Chris Halkyard, chief supply chain officer and general manager of distribution services for flash sales site Gilt, supplying customers with a steady stream of pleasant surprises is the whole point.

Each day, Gilt emails its eight million members discounted deals on more than 40 new sales of designer brands, typically available for only 36 hours, beginning at noon Eastern Standard Time (EST). The innovative approach to e-commerce has been a success—the company posted $550 million in top-line sales for 2012.

To serve this business model, Halkyard's job requires managing a regular influx of diverse goods and rapid fulfillment of customer orders. He is responsible for global supply chain management, including international and domestic logistics, product distribution, international shipping, and packaging supplies, as well as third-party distribution for select Gilt brand partners. He also steers vendor compliance, inventory control, and Gilt's purchasing program.

Before joining Gilt in April 2010 as vice president of operations, Halkyard was senior vice president of supply chain for clothing brand Ecko Unlimited, where he closed several facilities and opened others in order to better align the company's supply chain with a new business plan. Prior to that, he worked at beauty and home products retailer L'Occitane en Provence as vice president of supply chain and logistics, automating the company's New Jersey distribution center and modifying the domestic distribution network.

Halkyard has also held senior operations and distribution positions during periods of rapid growth at FAO Schwarz, TJ Maxx/Marshalls, and May Department Stores Company. He attended the University of Maryland-College Park, and is a veteran of the U.S. Armed Forces.

**Q: The flash sale business model is relatively new. How does Gilt work?**

**A:** Gilt is an innovative online shopping destination offering members special access to merchandise and experiences at insider prices. Our buyers continually search the world for coveted brands and products, including fashion for women, men, and children; home decor; and unique activities in select cities and destinations.

We photograph and style most products we feature on the site. We then email an announcement to our member base right before the daily sale starts. Brand-specific sales start at noon EST, and most are only available for 36 hours.

Members score bargains on popular brands—but they have to act fast. They have 10 minutes to check out once they place items in the cart, and quantity within each sale is limited. We don't display a stock count on a given item, although we may announce when only one item is left. This approach creates a competitive shopping model, which has been very successful.

**To better manage its constantly changing inventory, Gilt established a 303,000-square-foot facility in Louisville, Ky. A robotic picking system handles high-throughput items, while workers use radio frequency hand scanners to pull slower-moving goods from picking mezzanines. Large, bulky products are crossdocked, or picked from racks or off the floor.**

## Q: What is the timeframe between Gilt receiving products and offering them for sale?

**A:** It varies between several weeks and several months. For goods purchased overseas, for example, the process takes a lot longer. But Gilt buyers may be purchasing for the next quarter, or even the next season. Our forecast covers several months.

## Q: How is the flash sales model different from other retail and e-commerce businesses?

**A:** I've been in retail supply chain distribution for more than 25 years. I've moved just about every kind of product, and I've managed direct-to-consumer e-commerce operations for the past 10 years in the last three companies I've worked for.

But none of those experiences compare to flash sales, because Gilt doesn't carry staple items. We don't sell standard replenishable items—the kind where you receive a purchase order every month, then bring in whatever you sold last month, plus or minus 10 percent based on seasonality. That's easy. Inventory comes in, you handle it, then you replenish it.

With flash sales, however, we're never sure what products we might be getting over the next few months. We develop partnerships with brands, but we know that when the goods come in, they will be in limited quantities, and represent a significant number of stockkeeping units (SKUs).

We define SKUs as a single size, style, and color. When shoes come in, for example, we may receive one style in seven different sizes. Managing items that way creates a lot of different SKUs.

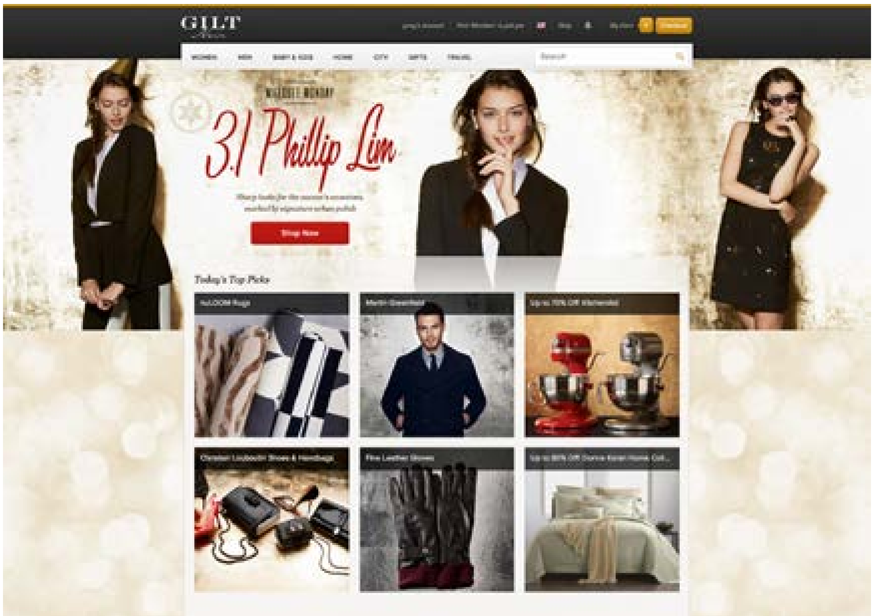
At any given time, however, we're only selling about 15 percent of all the items in our inventory. From a supply chain perspective, we're changing our store every day. Any items that don't sell out during the 36-hour window remain in the system—but those SKUs aren't available to sell, and they aren't moving.

## Q: What happens to the goods you don't sell?

**A:** We have a high sell-through rate, but for goods that don't sell in the 36 hours, we hold the inventory and offer it to our member base again at a later date.

## Q: How does Gilt manage all those SKUs—goods that are currently on sale, those that haven't gone on sale yet, and items that will be offered again in the future—within the DC infrastructure?

**A:** We operate three different types of picking infrastructure. When items go on sale that we project will have high throughput, we use robotic picking, which produces the highest-volume output on the market today. The robotics system maximizes our overall cost structure, and is extremely accurate.




**Gilt adds new products to its site daily, offering members 36 hours to purchase brand-name women's, men's and children's apparel, and home goods, at deeply discounted prices. Products are ground-shipped for delivery three to six days after purchase.**

For slower-moving items that don't require a high-speed, high-throughput system, we use picking mezzanines, with radio frequency hand scanners. For some big, bulky products, we pick off racks, from the floor, or via crossdock.

Each system is associated with a different cost structure and productivity level, but they all meet our service requirements, which is the ultimate delivery promise to the customer. Our ground-shipping cutoff is three to six days from purchase point to customer receipt.

## Q: How has Gilt's supply chain evolved since you joined the company?

**A:** When I was hired in April 2010, Gilt was outsourcing distribution to third-party logistics (3PL) providers. As a startup, that made sense. As long as the core competencies are in line, 3PLs can fill in the capabilities your company doesn't have in-house.

But when I joined the company, I saw the way Gilt's business was scaling, and I didn't think we would make it through the 2010 holiday season successfully. Our growth was significant, and much higher than we projected—which means it also was higher than what we told the 3PLs to be prepared for.

We were overwhelming the 3PLs with business, so we had to take drastic action.


Size matters
And we're ready for it

We were operating two facilities—in Brooklyn, N.Y., and in Massachusetts. The Massachusetts DC was handling our home goods and men's products divisions; the women's and children's products were in Brooklyn.

I asked the board of directors for a significant amount of capital to bring in engineers and materials handling integrators so we could determine how a flash sales fulfillment operation should look, from the ground up.

We analyzed projected sales and peak seasons, major sales channels, average monthly inventory plans, and annual inventory turns. We calculated the after-tax return on investment using a 100-percent versus 50-percent robotic fulfillment system.

By conducting that level of research, we determined we didn't need voice-picking technology, a pick-to-light system, or a tilt-tray sorter. While any of those solutions would have worked, the operation would have cost more, and the overall return wouldn't have been as impressive.

We ended up planning a much smaller robotics footprint based on anticipated inventory turn, and included a deplenishment feature. Pairing the robotics with a standard, radio frequency hands-free device gave us exactly the system we need.

**Q: Once you defined your requirements and planned the facility, how did you transition your operations?**

**A:** We found a 303,000-square-foot facility available in Louisville, Ky. We moved in June 2010, and the robotics system was running by the end of August. By early fall, we had moved our home goods division from Massachusetts; by November, we had moved our men's business. We were able to shut down most of the Massachusetts facility before the holidays.

We made it through the 2010 holiday season operating the two divisions from Louisville, and the women's and children's divisions from Brooklyn. During that time, we finished construction on an outbound sorter and one mezzanine, so we were able to move the women's division in spring 2011, and children's in early summer.

> Consumers can buy the same item on many different websites, so the customer experience is key.

We still operate the Brooklyn facility for inventory management and crossdocking for sell-first items—products that we post on the site and sell, then submit a purchase order to the supplier. We receive and crossdock the items, and pack the customer orders. We handle about 40 percent of our sell-first products in Brooklyn; a third-party crossdocking facility in Las Vegas handles another 40 percent; and the remaining 20 percent go through Louisville.

**Q: What does your outsourced logistics partner network look like?**

**A:** We use several 3PLs and technology providers. For example, Quiet Logistics supplies our warehouse management system, American Cargo Express manages crossdocking operations and international business, FreightCo Logistics handles inbound management, and we work with Newgistics for our reverse logistics program. The list of providers is extensive, and they are all extremely focused on their roles.

**Q: Do Gilt's facilities use packaging-on-demand or any specialized packaging solutions?**

**A:** We don't use packaging-on-demand. I don't have anything against it, but we haven't looked into it. We have several different box sizes, but an order may include a clock, a mixing bowl, and a designer suit. The packing process is automated to a point, but packers have to make judgment calls.

**Q: How do you handle reverse logistics?**

**A:** If customers want to return an item, they go to the Gilt website within 21 days, and print a return shipping label for U.S. Postal Service pickup. The product ships to our reverse logistics partner, Newgistics, which builds 53-foot loads for milk runs from its facilities into Louisville. We receive forecasted return quantities, so we know what to expect.

We unload the shipments, check goods in, and confirm whether they can go back to stock or are damaged. Then we issue the customer refund.

**Q: What are your plans for overseas investment or expansion?**

**A:** We ship to more than 100 countries. We're seeing traction all over the world, including Canada, Russia, Australia, and Korea. These are great markets for us, and business is increasing significantly month over month.

**Q: What challenges do you see on the horizon for e-commerce businesses?**

**A:** Consumers can buy the same item on many different websites, so the customer experience is key. Gilt invests in its product division—and the product is the site. We work hard to ensure Gilt doesn't look like any other site.

To be successful, e-commerce companies must pay attention to the entire sales process. Do customers receive the item they expect, on time and undamaged? Is the unboxing experience fun?

We try to make it special. We invest in our boxes and packaging, because it's important to us that customers enjoy their Gilt experience and come back to shop again. That's the most important thing. ■

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# FTZ BASICS & BENEFITS

Foreign Trade Zones can help global shippers maximize savings and minimize operational costs. Speeding customs clearance and eliminating paperwork seals the deal.

**by Justine Brown**

The global economy is altering how goods are produced. Today, parts made in one country are increasingly assembled in another, then sold in a third. As global trade expands, foreign trade zones (FTZs) grow in importance as well.

During the Great Depression, the Foreign Trade Zones Act of 1934 created FTZs to expedite and encourage foreign commerce, and reduce costs for U.S.-based operations engaged in international trade.

Today, in the United States, an FTZ is a geographical area where commercial merchandise, both domestic and foreign, receives the same customs treatment it would if it were outside the commerce of the United States. Importers, distributors, manufacturers, and others can activate the FTZ option to defer, eliminate, or reduce duties on imported goods.

"The global supply chain continues to add value to duty-free zones, with every country counting on others to supply raw materials, finished goods, and other services," says Terry McMullen, managing director of AIT Worldwide Omaha (AIT Worldwide Logistics is the global partner of the Omaha FTZ). "With more countries getting into the global trade mix with new products every year, the world is becoming more reliant on this flow of commerce."

FTZs also help maintain U.S. employment opportunities. While U.S. FTZs account for less than one-half of one percent of all world zone workers, and a small share of the U.S. workforce, most of this employment is in manufacturing, which has lost a significant share of workers during the past several decades.

FTZs are supervised by U.S. Customs and Border Protection (CBP), under the U.S. Homeland Security Council. Every state currently maintains at least one FTZ, and many have numerous manufacturing operations. In all, more than 230 FTZs, and nearly 400 subzones, operate in the United States.

## Improving Competitiveness

An FTZ's primary advantage is its ability to improve a company's competitive position. Businesses can avoid import duties if goods that enter the FTZ are stored, sorted, tested, repackaged, and otherwise handled within the FTZ, then exported without ever entering the U.S. marketplace.

For those products that do enter the U.S. marketplace, duty payments are due only once. Postponing payment provides a cash-flow advantage to importers and exporters. In addition, duty and tax rates on merchandise admitted to an FTZ may change because of operations conducted within the zone. A company may elect to pay either the duty rate applicable on the foreign material placed in the zone, or the duty rate applicable on the finished article transferred from the zone – whichever they find more advantageous.

For example, import duties on components are often higher than duties charged for finished products entering the U.S.


**Tacoma's transition to an Alternative Site Framework offers many advantages—guaranteed designation in 30 days, less paperwork, simplified application, and lower costs—to companies requiring FTZ services.**

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Governor Martin O'Malley MDOT Secretary James T. Smith, Jr. MPA Executive Director James J. White market. Ball bearings imported from Korea, for example, may have a nine-percent duty rate. But those ball bearings can be placed in an FTZ, then installed into an automobile steering assembly. If the finished vehicle, once manufactured, has a 2.5-percent duty, then the entire assembly of parts and equipment gets the lower duty rate.

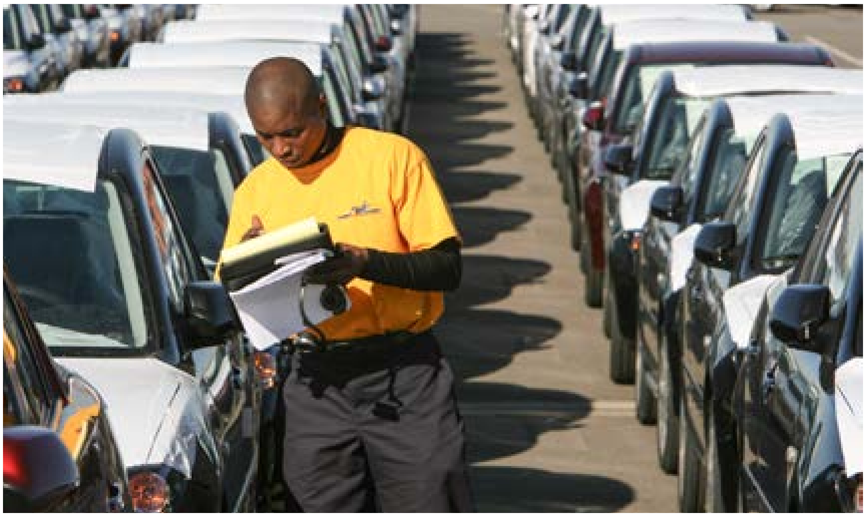
"A lot of cars come through the Port of Tacoma," says Annika Dean, real estate specialist for the port. "Paying duties on just the finished product, rather than on each component the automaker is importing, is a huge deal. It allows carmakers to remain competitive in the global marketplace."

## Cutting Down on Paperwork

FTZ users gained additional economies of scale in May 2000, when President Clinton signed the Trade and Development Act, which contains a provision that allows the use of the Weekly Entry procedure for all FTZs. Under Weekly Entry procedures, FTZ users file only one Customs Entry per week, rather than one per shipment. Customs no longer has to process an entry for each shipment being imported into the FTZ, and the importer no longer has to pay for the processing of each entry. Alternatively, if companies are importing into a non-zone, they pay a merchandise processing fee for every container that comes off a ship.

In addition, companies can conduct zone-to-zone transfers, so they do not pay duties if they move materials from one FTZ to another.

But FTZs are not necessarily beneficial to all types of importers and exporters. The advantages depend on the manufacturer and the industry. The automotive industry relies heavily on FTZs because it often sources parts from several different countries, and assembles them in yet another country. For example, a combination of low costs, convenient location, and a slew of free trade agreements have made it more advantageous for automakers to assemble cars in Mexico.



**Many automakers establish operations in FTZs, enabling them to pay duties on final assembled products, rather than each separate component.**

In November 2013, Nissan opened its second final assembly plant in Aguascalientes, Mexico. Honda, Mazda, and Audi are also adding assembly lines in the country. In 2013, Mexico was on pace to build 3.15 million vehicles, which represents 19 percent of all cars and trucks made in North America.

Apparel and retail importers also can benefit from using an FTZ. "Garments and other retail items carry as much as 20 percent or higher duty," says McMullen. "Using an FTZ, importers can bring three months' worth of product into the United States on two 40-foot containers, but pull out only the product they need each month by the pallet level. They pay only for the product they have brought into U.S. commerce at that time. Eventually they do have to pay the duties, but they also save by consolidating into larger shipping units. That model offers unique advantages."

## Choosing the Right Type of FTZ

There are two types of foreign trade zones: general-purpose zones and special-purpose subzones. A general-purpose zone is typically a multi-tenant building or industrial park site that has been designated as an FTZ. By definition, a general-purpose zone must be available to more than one company, and is for warehousing only.

General-purpose zones are well-suited to smaller companies, or those without an ongoing need for an FTZ. Such businesses can access the benefits of an FTZ as needed, and avoid the costs associated with investing in their own infrastructure. Because multiple companies utilize the same footprint, costs are deferred.

Companies that use a general-purpose FTZ can also involve a third-party logistics (3PL) provider to assist them. The OpTech Group, for example, provides 3PL services in San Antonio; its location at East Kelly Railport is the only active FTZ in the region.

"Our FTZ is public; we operate it, and new companies that want to use it subcontract with us," explains Brian Hickert, vice president of sales and strategy for OpTech. "We run their materials through our warehouse, but it's not dedicated to them.

"This model is ideal for a company that might not have an ongoing need for an FTZ, or a company that just isn't sure yet," Hickert adds. "They can use OpTech as a 3PL for FTZ services, then gauge whether or not they want to activate their own FTZ."

In addition to traditional duty-deferred warehousing, OpTech also provides value-added services such as kitting and assembly. "Importers can place inventory in the United States, where we can configure it, or kit items together to fit their needs," says Hickert. "We can then deliver that finished product to any major city outside San Antonio within two or three days. Using this approach, importers can serve customers better than large producers with a more static supply chain."

Such companies can also utilize a 3PL

## How FTZ Users Save Money

**Duty Reduction on Inverted Tariff Situations:** With specific authority, zone users may choose the lower duty rate when a product is entered into customs territory (for import) in inverted tariff situations (when the tariff rate on foreign inputs is higher than the tariff rate applied to the finished product produced in the zone).

**Duty Deferral:** Cash flow savings can result because customs duties are paid only when and if the goods are transferred from the zone to U.S. customs territory for consumption.

**Duty Exemption on Exports:** No duty is payable on goods that are exported from a zone, or scrapped or destroyed in a zone.

**Duty Drawback Elimination:** Zones eliminate the need for duty drawback – the refunding of duties previously paid on imported, then re-exported, merchandise.

**Tax Savings:** Goods stored in zones, and goods exported, are not subject to state and local ad valorem taxes, such as personal property taxes, where applicable.

**Zone-to-Zone Transfer:** Zones can transfer merchandise "in-bond" (i.e., insured) from one zone to another. Customs duties may be deferred until the product's eventual entry into U.S. customs territory.

**Customs Inventory Control Efficiencies:** Cost savings (especially cash-flow savings) can occur from zone efficiencies affecting inventory control. These efficiencies include customs procedures such as direct delivery and weekly entries.

SOURCE: U.S. Foreign-Trade Zones Board

to help optimize their processes so they pay the lowest duties. 3PLs can examine packaging, for example, to ensure the company's product moves using the least space possible and in the quickest time.

"Companies that bundle their products well, and play the game smart, can end up paying a lot less than companies that don't," says Hickert. "For example, we have a customer whose competitor is in the same FTZ—they sell the same product. But one company can put only 40 bottles of product on a pallet, while the other can put 100 bottles on a pallet. One pays a premium because it didn't think about the whole process.

"Companies that operate through a public FTZ, and utilize 3PL assistance, can get access to these additional services, as well as recommendations for how to optimize the entire process," he adds.

A 3PL that works within an FTZ may also assist companies with goods that fall under import quotas. "Because those caps often run out on a first-come, first-serve basis, smart shippers can bring their merchandise into the FTZ at the end of the year," says Hickert. "On Jan. 1, when the import quota opens, they put their inventory in, and are first to apply for the permit. That's a sophisticated shipper that knows how to leverage the FTZ."

Another approach that can be used under general-purpose zones is an Alternative Site Framework. This FTZ designation was recently created by the Obama Administration, and is intended to extend the benefits of an FTZ to areas outside of existing zones without the lengthy filing application and administrative overhead inherent in traditional foreign trade zones.


**The automotive industry is increasingly assembling cars in Mexico to take advantage of FTZs. In 2013, Nissan executives and former Mexican President Felipe Calderon celebrated the opening of a new manufacturing complex in Aguascalientes, Mexico.**

### The Alternative Advantage

In 2011, Tacoma moved to an Alternative Site Framework. This approach offers a number of advantages to companies requiring FTZ services, such as guaranteed designation in 30 days, reduced paperwork, simplified application, and lower costs for all parties involved. Under the Alternative Site Framework, Tacoma's FTZ footprint extends to its entire county.

"We can work with an operator anywhere in Pierce County to designate a site," says Dean. "Under the Alternative Site Framework, as long as a company is approved and compliant with customs requirements, the FTZ can be virtual."

The second type of FTZ—a special-purpose subzone—is for the benefit of one company only for a limited purpose that cannot be accommodated within an existing zone site. A typical subzone designation includes the acreage where one company's manufacturing or distribution facility is located. Subzones generally work best for large companies, and are not generally cost-efficient for smaller ones.

"The most common FTZ is when a manufacturer operating a large distribution center or plant asks CBP to designate part of their facility, in which they only handle their own materials, as an FTZ," says Hickert. "Customs can then come in and out of the facility regularly to verify the manufacturer's activities."

### The Combination Approach

Many states utilize a combination of FTZ approaches. Washington, for example, has a disparate set-up. Several large companies, such as Boeing, operate their own FTZs at their own facilities, while other companies utilize the Alternative Site Framework. In 2012, Tacoma's FTZ received more than $2.1 billion worth of foreign status merchandise.

Brooks Sports and The Home Depot are the port's newest designated sites, and are currently working with CBP for activation. In all, the Port of Tacoma currently has 16 FTZ operators, of which six are activated.

Some FTZs are located at ports, while others are inland. Both port-located and inland-located FTZs provide the same features and benefits. The location of a company's final customers is the most important factor in determining which FTZ to use.

For example, Miami is an ideal location for imported goods from Asia destined for U.S. consumers and Latin American customers. When a 40-foot container arrives at the Miami FTZ, cargo is unloaded. When the U.S. goods in that container are ready to come into U.S. commerce, then the importer pays a duty. But product transiting the FTZ in Miami and moving to Latin America can be re-exported without the company having to pay U.S. duties.

## Traditional v. ASF Designation

**Designating traditional FTZ locations is a long, complex process. The ASF designation was designed to enable a quicker, more flexible application. Here's a brief comparison.**

### TRADITIONAL FTZ FRAMEWORK

**Allows for magnet sites based on grantee's ability to attract multiple potential FTZ operators and users.**

**Procedure:**

- Submit an application for FTZ Board action
  - Generally 10-month process
  - Greater documentation requirements
- Submit a request for administrative "minor boundary modification" for FTZ Board action
  - Generally 30-day process
  - Involves "swapping" like properties from existing sites

### ALTERNATIVE SITE DESIGNATION & MANAGEMENT FRAMEWORK

**Allows for usage-driven sites for a company ready to pursue conducting FTZ activity**

**Procedure:**

- Once approved for ASF, generally 30-day process
- Simplified and rapid minor boundary modification actions

**Advantages:**

- Enhanced ability to respond quickly to evolving FTZ-related needs
- Magnet sites
- Usage-driven sites
- Allows for subzones
- Eliminates need to "swap" like amounts of acreage from existing sites

SOURCE: PointTrade Services, Inc.

Although port-located and inland-located Foreign Trade Zones share the same features and benefits, inland ports are growing faster. One reason may be the cost of warehousing.

"Warehouse fees in West and East Coast port FTZ zones can be as much as 70 percent higher than in the Midwest," says McMullen. "Companies can reach the rest of the country from Nebraska in two to three days, at a low distribution cost, with economical warehouse fees."

### Pitfalls and Challenges

The challenges associated with using an FTZ depend on its type. Overall, documentation and compliance with CBP rules and regulations are critical. For companies that are operating their own FTZ, making sure inventories check and balance is important.

Since 1986, CBP has conducted oversight of FTZ operations on an audit-inspection basis known as Compliance Reviews. These reviews assure compliance through audits and spot checks under a surety bond, rather than through on-site supervision by CBP personnel.

For FTZ operators, software compliance is another challenge. Operators need to implement software that interacts directly with CBP technology systems, and timely compliance has been difficult for some.

Meanwhile, companies that utilize public FTZs can face challenges associated with sharing FTZ space and resources. "It's easy to optimize processes when you are running a facility for one customer," says German Rico, general manager of East Kelly Railport at Port San Antonio. "But it's much harder to run several customers, with different requirements, through the same facility."

New companies can also encounter obstacles when dealing with CBP, and those preparing to use an FTZ for the first time should be prepared for delays.

"Customs will red-flag any new company importing into the United States until it has a good feeling about its profile," says Rico. "The agency does this for all companies—even established ones getting into new products."

Rico encourages new companies to

ensure they have "safety stock" to help deal with such delays. "Many new companies are in a rush because they want to hit the market quickly, so they order and import just enough stock," he says. "But after three weeks in operation, a shipment might get held up for one week because CBP wants to do an intensive inspection, or lab work. If companies don't have safety stock, the supply chain flow can be delayed. Then they are in trouble."

### Future of FTZs

The future of FTZs looks bright. FTZ activity in Nebraska has grown over the past five years, with two additional subzone FTZs opening—one at Cabela's in Sydney, Neb., and one in Grand Island. Tacoma also has experienced a significant uptick in inquiries from companies looking to utilize FTZ services.

"As every aspect of business grows more competitive, FTZs are becoming an important strategic tool for any manufacturer of any volume," says Vince Sullivan, business development manager for the Port of Tacoma. "Foreign Trade Zones are a critical component of any business plan for companies importing product and carrying inventory."

The continued growth of the global economy could help expand FTZ use, as well. "We will see robust growth in FTZ activity around the country, as well as shifts in different product use as the United States and other countries determine duty rates, commodities to be protected, and commodities that might go way up," says McMullen.

An increase in the use of free trade zones around the world could also play a role in FTZ growth. In November 2013, European and U.S. officials resumed negotiations on a trans-Atlantic free trade agreement.

"The United States and European Union will sign a trade agreement by 2015," predicts Hickert. "When that agreement begins, we'll be able to leverage the many benefits we've been able to offer as a result of NAFTA for companies trying to access south Texas for shipments to Europe."

After the 1993 North American Free Trade Agreement was signed, questions arose as to whether foreign-owned operations along the U.S.-Mexico border would diminish in importance, and entire free trade agreement partner countries would become vast "free trade zones."

But free trade zone use has remained popular in developing and developed countries alike because of its diverse benefits, according to *U.S. Foreign-Trade Zones: Background and Issues for Congress*, a study published in November 2013 by the Congressional Research Service. In fact, 3,700 firms currently employ at least 1.2 million workers in zones in Mexico.

Whether or not additional free trade agreements emerge, it's clear that FTZs will continue to play an important role in foreign trade, and their multiple competitive benefits guarantee expansion and growth well into the future. ■

# RAIL TRENDS RECAP

## SHARED STRATEGIES, MIXED SIGNALS

by Joseph O'Reilly

**From growing pains to safety to regulation, the rail industry will cross many challenges in the year ahead, and they all affect shippers. *Inbound Logistics* brings you aboard with Rail Trends conference coverage.**

The 2013 Rail Trends conference, sponsored by *Progressive Railroading* and hosted by Tony Hatch, principal at ABH Consulting, came off without a hitch. That was a relief after Hurricane Sandy delayed the 2012 conference by one month.

This year's conference centered on a tempest of a different sort—a July 2013 train derailment in Lac-Mégantic, Quebec, in which an engineer left a train hauling crude oil parked, running, and unattended on the tracks. The train rolled through the mountainous area, careened off the tracks, and exploded. The regulatory clouds have been gathering ever since.

While the circumstances surrounding Lac-Mégantic were unique, the incident coalesced a number of trends that have been swirling for some time: the Keystone XL pipeline impasse and movements of crude oil by rail; railroad safety; equipment standards; the viability of short line and regional operators; infrastructure concerns; and the constant chafing between public and private sectors.

Lac-Mégantic provided an unfortunate backdrop to many of these discussions. The regulatory rush to judgment that often follows misfortune is forcing the industry to yank the brakes—at a time when railroads are opening the throttle to keep pace with new growth opportunities.

Intermodal traffic hit record numbers in 2013. Investment in hinterland infrastructure, hastened by the shale oil and natural gas boom, is off the charts. As U.S. energy independence nears and manufacturing returns, the railroads are in a prime position to capture market share.

The juxtaposition between regulatory constraints and free-market growth framed the 2013 Rail Trends program.

### Defending Safety Records

The 2012 conference's defiance over the recurring threat of re-regulation was notably muted in 2013. Instead, railroad executives were forced to defend the industry's safety record while addressing questions about regulatory change in the aftermath of the Quebec derailment.

"Any time something like Lac-Mégantic happens, it's devastating," shared Hunter Harrison, president of Canadian Pacific Railway. "I laid awake at night, thinking about what should have been done, what should have happened, and if we have done everything we can do."

Acknowledging the failure that occurred, and the need for industry to learn from the experience, Harrison cautioned against rash reactions. He believes railroads need to focus on helping to change human behavior—grow the culture and pride of railroading—to ensure compliance with existing rules.

"If an engineer doesn't set the brakes, regulations are not going to help," he said.

Regulatory pushback, however, is already in full force. Michael Bourque, president of the Railway Association of Canada (RAC), wouldn't comment on specific details of the incident because the investigation is ongoing. But he did talk about its inevitable repercussions.

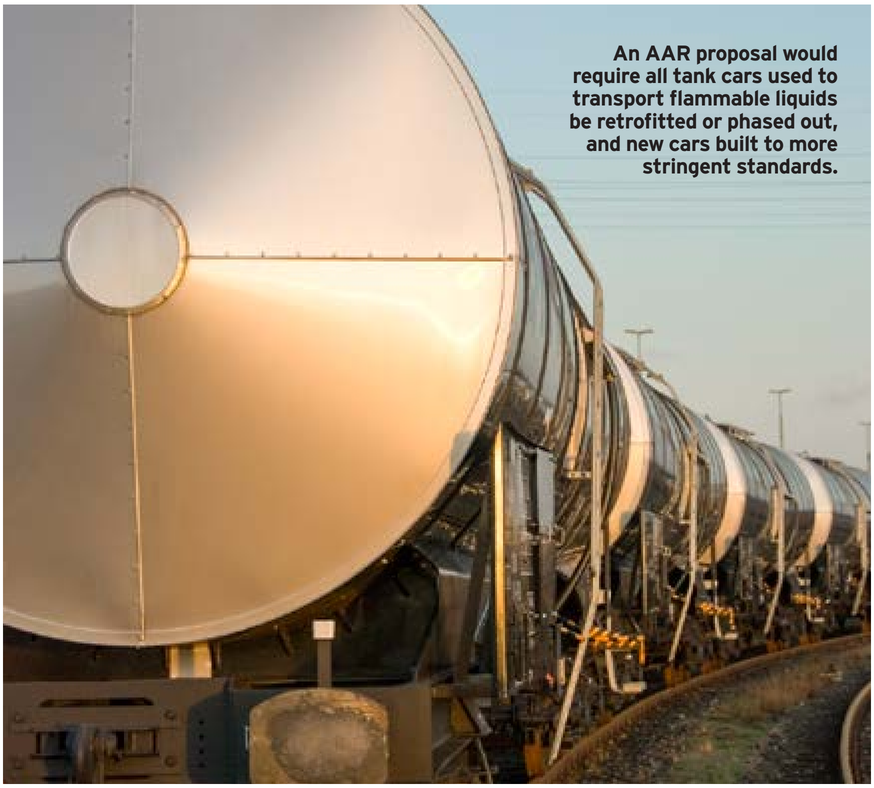
"There's sensitivity around what happened," he noted. "Public pressure to increase regulation is a natural reaction."

Following Lac-Mégantic, authorities directed an emergency order that addressed locomotive securement. Two-person crews are now mandated when operating locomotives transporting dangerous goods; trains can't be left unattended; doors have to be locked and reversers removed; and railroads have been instructed to reassess braking procedures.

Bourque and the RAC are in the process of working with Transport Canada to identify how these directives might be shaped into permanent rules. He expects some significant changes coming down the legislative pipeline.

One change is Canada's push to adopt the U.S. Positive Train Control (PTC) mandate. Currently, a bigger issue is new grade-crossing regulations—a concern that directly pits public and private sector interests against one another.

"It will cost a significant amount of money," Bourque said. "The most nefarious part of the regulation limits a train from occupying a crossing for more than 10 minutes. We run longer units, and 10 minutes would force even some 6,000-foot trains to be out of compliance. We are pushing back on that issue."



**An AAR proposal would require all tank cars used to transport flammable liquids be retrofitted or phased out, and new cars built to more stringent standards.**

"Part of the problem in the rail industry is too many committees, and too many regulatory agencies," said Harrison. "We're so stuck in the mud we can't get anything done."

Harrison was specifically referencing the spring 2013 flooding in Alberta—which at one point wiped out four of Canadian Pacific's main routes—and the regulatory disorder that followed as the railroad tried to get back online.

Lac-Mégantic similarly triggered action on a number of different fronts. The U.S. railroad industry's response has largely shadowed Transport Canada's emergency directive.

"One tweak the United States added is that a train crew must call the dispatch office and report where a train is parked, how many cars are tied down, the slope of the track, and the weight of the train, among other things," explained Ed Hamberger, president and CEO of the Association of American Railroads (AAR).

The AAR is also tweaking OT-55, a long-standing voluntary safety protocol that railroads have adopted for hazmat trains. Following Quebec, the AAR added unit trains—more than 20 cars of flammable liquids—to the definition of "key train", and made hazmat specifications more inclusive. For example, a 50-mph speed limit is in effect for all key trains carrying crude and ethanol.

The issue of safety is paramount among railroads. But the industry has a decent track record. Rail is 10 times safer than truck, according to Joe Szabo, head of the Federal Rail Administration (FRA). And accidents and injuries have been reduced by 43 percent over the past decade.

"2012 was the safest year ever, but that's last year's news," Szabo said. "What are we going to do tomorrow, and every day thereafter?"

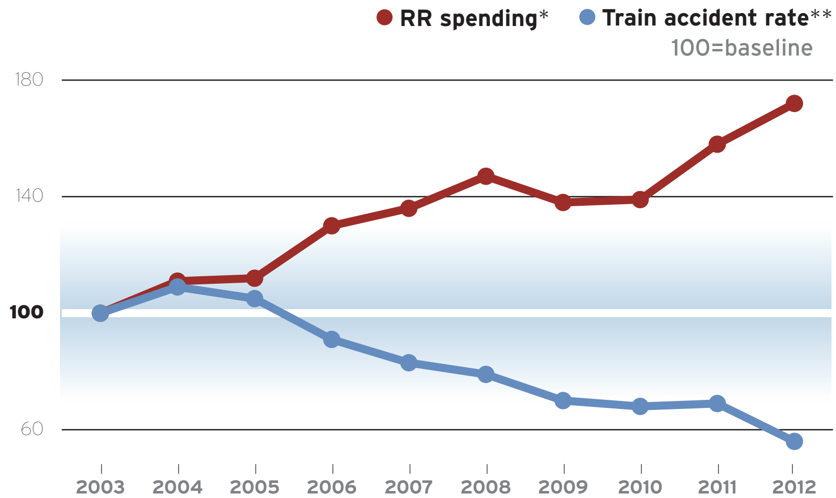
If Congress, the Department of Transportation, and its many arms—including the FRA—have any say, more legislation and regulation is likely. The threat of further restrictions is a serious concern for railroads.

Regulations are an enormous headache, said General Richard F. Timmons, president of the American Short Line and Regional Railroad Association. By his count, there have been 608 new rules or amendments since 2008—and it's a continuing trend. This oversight puts a considerable burden on his constituents.

"These unfunded mandates for small railroads offer few safety and productivity returns," he said. "Given the profile of small railroads—their size, speed, the time of day they operate, a lack of crude for the most part—many of these mandates are also very costly."

## Investing in Rail Safety

**As rail spending on infrastructure and maintenance rises, accidents are on the decline.**




*Capital spending and maintenance expenses – depreciation | **Accidents per million train-miles | Source: AAR, FRA

### Two-Man Crews

Lac-Mégantic also generated much discussion about hazmat securement and two-man crews. While two-man crews are standard operating procedure for Class I railroads, short lines have long relied on single-person crews for economic reasons.

The 500-mile Indiana Rail Road Company is a good example. It was the first railroad to make extensive use of remote control technology. Today, Indiana Rail Road uses more one-person crews over the road—about one-third of all its crew starts—than any other railroad.

"In 20 years, not one accident occurred that could have been prevented if we had two or 15 people on board," noted Tom Hoback, president and CEO of the Indianapolis-based operator.

Still, two-person crews will likely become a divisive issue between regulators and railroads.

"We're having a necessary, but spirited, debate," Szabo said. "The FRA believes that for most railroad operations, the use of a multiple-person crew enhances safety. We're not looking to force a one-size-fits-all approach. We clearly understand there are nuances in railroading."

The AAR has also been heavily engaged with the FRA on the issue, contending that lack of crew wasn't a contributing factor to Lac-Mégantic.

"Two-man crew proponents argue that you need redundancy. Safety is about human error; and human error is a major cause of accidents," said Hamberger. "We're spending $8 billion to install positive train control (PTC) systems, which are necessary to override human error."

Two outstanding concerns surround PTC systems—an issue Hamberger calls a "veritable favorite" at Rail Trends conferences over the years. The AAR is still awaiting confirmation from Congress regarding a five-year extension for full roll-out. Hamberger expects it will have some PTC installed by the year-end 2015 deadline.

As far as installing infrastructure, AAR has run into issues with the Federal Communications Commission (FCC) and Indian nations regarding land rights and usage. Consequently, it hasn't installed one PTC antenna since April 2013.

"The FCC told us we're not living up to National Historical Preservation Act requirements in terms of where we site our antennas," explained Hamberger. "It wants us to assess each antenna installment.

"These are not big, 300-foot radio towers. They are monopoles, 50 feet high, 95 percent of which are installed on railroad right of ways, not sovereign tribal land," he added.

The AAR, the FCC, and Indian nations are now in discussions to resolve the problem. The FRA, which does not have purview over PTC, is playing regulatory peacemaker, to a degree.

"We are making sure the FCC understands the sense of urgency and importance in seeing this necessary safety technology implemented quickly," Szabo says.

The biggest news on the legislative front involves proposed new flammable tank car standards. AAR proactively petitioned for this policy change in 2011, and met with the Department of Transportation and Pipeline and Hazardous Materials Safety Administration (PHMSA) to start the process. It fell through. Following Lac-Mégantic, regulators picked it up again.

The proposal would require all tank cars used in transporting flammable liquids—notably crude oil and ethanol—to be retrofitted or phased out, and new cars built to more stringent standards. AAR recommends new tank cars include steel jackets and high-flow capacity pressure relief valves, among other features.

Given Lac-Mégantic, and North America's energy boom, the timing is notable.

"The day we submitted our comments to PHMSA, a *Washington Post* headline noted that for the first time in 20 years, the United States produced more crude oil than it imported," Hamberger said. "We don't want to stand in the way of that development. We don't want to impede America's progress toward energy independence. We need to make sure we have the right balance of safety and capacity so we can continue to haul what America needs for fuel."

### Rail Re-regulation

Re-regulation, the bane of the railroad industry, has abated for the time being. Talk of re-regulation was notably understated among this year's Rail Trends presenters. Some even speculate that Senator John "Jay" D. Rockefeller's (D-WV) impending retirement could cast a different light on the debate as new leadership assumes control of the Senate Committee on Commerce, Science, and Transportation.

"Re-regulation was not as much of a crisis in 2013 as it had been in previous Congresses," noted Chuck Baker, partner at law firm Chambers, Conlon, and Hartwell, and president of the National Railroad Construction and Maintenance Association. "But we also get paid to be paranoid, so we still spend a lot of time worrying about it."

Bruce Carlton, president and CEO of the National Industrial Transportation League (NITL), rail shipper advocate, and annual AAR foil, was absent from the 2013 Rail Trends proceedings. That eliminated any spirited debate over the mandatory reciprocal switching proposal, which would require a Class I railroad to enter into a competitive switching arrangement whenever a shipper or group of shippers demonstrate that certain "objective operating conditions" exist, thereby providing more efficient, reliable, and cost-effective rail transportation.

A hearing was slated to convene in


**Canadian Pacific is participating in Positive Train Control, a rail industry initiative comprising a system of functional requirements for monitoring and controlling train movements to help increase safety.**

October 2013, but was postponed following the government shutdown. Any continuation will likely happen in early 2014. The AAR remains resolute in its opposition to the proposal.

Hamberger noted he was proud of the AAR's submission to the Surface Transportation Board regarding the NITL proposal on two grounds: it recognizes the economic cost to the industry; and it opens a second line of discussion that details the impact of an additional 7.5 million annual carload switches on the network's velocity and efficiency.

"Every carload switch is a lost day, more time in the yard, more yard crews needed—and it's the yards that slow down the network," Hamberger said.

Elsewhere on the legislative docket, the truck size and weight discussion is expected to pick up steam again in 2014 with re-authorization of President Obama's Moving Ahead for Progress in the 21st Century Act (MAP-21).

Some shipping industry advocates have lobbied for a legislative provision that would increase allowable truck weights on a single-trailer truck to 97,000 pounds. Additional proposals address increased trailer lengths.

The railroad industry opposes these changes — especially among short line and regional operators, where such policy would have the greatest impact.

### The Rising of the Railroad

Safety and security have always been top-of-mind concerns for railroads. Those concerns are magnified even more because of the industry's growing profile. The U.S. industrial base is brimming with potential — thanks, in large part, to an emerging energy renaissance. The railroads are a major lever in this transformation.

Recently, North Dakota's Bakken oil field and the Eagle Ford reserves in South Texas together have accounted for two-thirds of U.S. shale production. Then there's the West Texas Permian shale oil yield, and Appalachia's natural gas stash in the Marcellus Basin. The Athabasca oil sands in Alberta are the largest reserves outside of Kazakhstan and Russia. And Mexico remains untapped. North American fuel independence is looking more plausible than ever.

Energy-intensive industries are already staking their claims. Chemical shippers, long dependent on rail transport—and with whom carriers have a contentious relationship, especially over regulations—are expected to be big players.

"Shipper capital expenditure in the chemical industry, as a result of natural gas, is expected to be $116 billion in the Texas and Louisiana Gulf alone," said ABH Consulting's Hatch. "We'll be a chemical exporting nation again."

Elsewhere, 2013 proved to be a transition year as other commodity groups saw an end to "the slide." Coal had been dropping at a 15-percent yearly clip, while drought-ravaged grain crops also saw double-digit losses—all of which had marked impacts on rail movements.

Hatch expects agriculture will rebound due to America's infrastructure advantage. As one example, he cited the fact that 80 percent of Brazil's soybean harvest moves by truck, while in the United States 80 percent moves by rail.

The future for coal, however, remains bleak.

"We never voted on it, and it wasn't a big part of the last election, but green is here to stay," said Hatch. "Clearly we have codified a set of regulations, and to a lesser degree legislation, that affects the way coal will be moving in this country."

Consequently, railroads are challenged with finding new business to fill that huge void. That's why the Keystone XL Pipeline impasse has been a reprieve. Increasing crude and frac sand movements — a growing commodity for the mining industry—have been a boon.

Hatch believes that even as rail serves as a placeholder for new pipelines, it will eventually retain as much as 40 percent of the business coming out of Bakken when capacity eventually comes online. Pipelines are slow and inflexible. If railroads can prove they are safe and efficient, they'll benefit from long-term growth potential.

New energy commands the headlines, but intermodal is the real growth driver in the railroad industry.

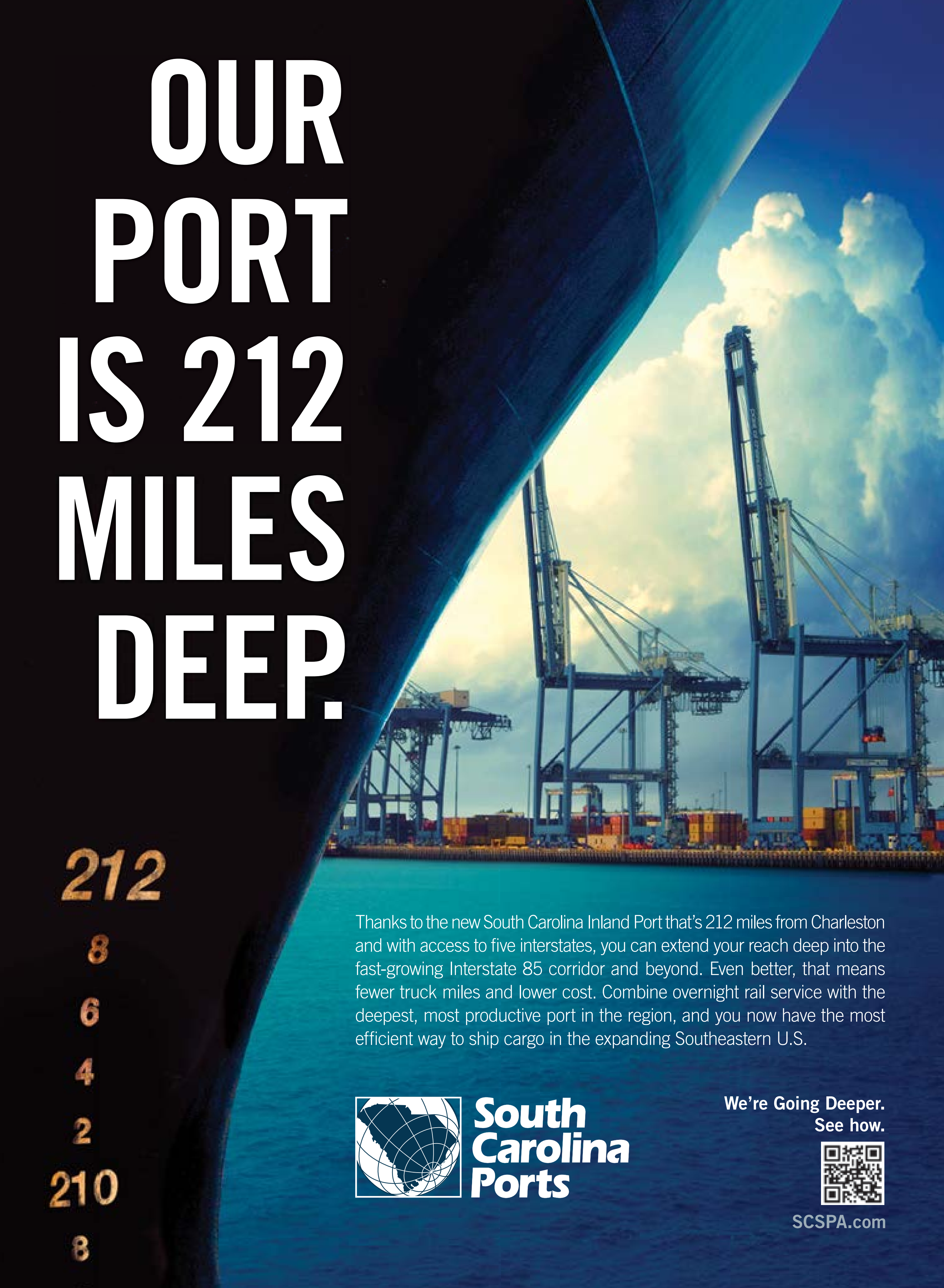
"We all get excited about shale oil, but the real story is domestic intermodal," explained Hatch. "Energy's net-net gain is a negative thus far, because the drop in coal is significantly larger than the increase in oil, frac sand, and pipeline together."

To point, U.S. rail traffic saw record intermodal growth in 2013, with 12.8 million container and trailer moves. This figure trumps the previous record high in 2006, according to AAR.

The trials and tribulations of the trucking industry only give railroads greater leverage to attract more long-haul business. Even though trucking conditions leading into 2014 are favorable, and spot market capacity and rates are holding surprisingly steady — and rising — the horizon is hazy.

Trucking costs are increasing in every category except fuel, according to Larry Gross, senior consultant at FTR Associates. Some estimates suggest the Hours-of-Service amended rules will result in a three-percent hit on productivity. With driver retention and recruiting problems now entrenched, truckers have less incentive to invest in new capacity. Instead, the industry experienced a great deal of consolidation in 2013—a trend that is likely to continue.

> "2012 was the safest year ever, but that's last year's news. What are the rails going to do tomorrow, and every day thereafter?"
>
> —**Joe Szabo,** head of the Federal Rail Administration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Some of these pressures could be allayed if Congress were to pass new truck weight and size legislation, Gross acknowledged.

Shippers ultimately pay the price—literally—so intermodal will become a viable option. Opportunities exist for trucking companies to steer growth, too.

"In the move from a long-haul driver environment to short-haul drayage pickup and delivery, intermodal allows carriers to access different driver pools," explained Brian Bowers, senior vice president of intermodal and automotive at Kansas City Southern. "Driver retention rates drop from 100 percent for truckload drivers to as low as 20 percent for drayage drivers."

## Capturing Truckload Share

With long-haul truckload prospects dimming, railroads see a huge opportunity to capture market share at their expense. There are some nuances, however. Canadian Pacific's Harrison draws a distinction between international and domestic intermodal growth, especially as it relates to scheduled railroading efficiency.

"International doesn't work well for us," he noted. "Some shipping lines are cutting down speeds on the high seas to save fuel. They're running to the ports, where boxes sit for six days, then are dispatched by train to the interior, where they sit for another three or four days.

"That process doesn't fit well with our model, but domestic does," Harrison said. "We are making headway with shippers that previously did not consider rail as a transport alternative."

The biggest growth area, according to Bowers, is cross-border Mexico trade. He called it the last intermodal frontier, adding, "I've never seen a growth opportunity with such scale and scope."

Cross-border trucking is "as dysfunctional as you can find," said Bowers. "U.S. and Mexican trucks routinely terminate at the border, and transfer to one another to manage delivery on the other end. Converting to intermodal actually gives U.S. carriers a bigger piece of the pie, where they can control 100 percent of the revenue."

Beyond that, the distances between emerging Mexican manufacturing locations—Toluca, San Luis Potosi, and Monterrey—and Houston are all well within the intermodal sweet spot of 500 to 1,000 miles. That's a major incentive to shift more freight from truck to rail.

**Coal movements are on the decline, driving railroads to turn to other commodities, such as crude and frac sand, to fill the void.**

## Short Lines & Re-industrialization

Rail transport, especially with all the possibilities that intermodal presents, is becoming a bigger part of supply chain conversations. The Rail Trends conference agenda skews more toward issues of pragmatism than strategy. But as more non-traditional rail users embrace intermodal, that is bound to change.

In 2012, Jim Hertwig, president and CEO of Florida East Coast Railway, impressed Rail Trends attendees with anecdotal evidence that short-haul intermodal works, and that supply chain futurists the likes of Walmart and UPS are using rail to help circumvent the unique inbound/outbound volume imbalance that exists in the Florida market. From an industry marketing perspective, examples such as this are worth their weight in crude.

Amid all the regulatory wrangling and talk about new growth areas, short line and regional railroads have the greatest stake. Heavy-handed government oversight adds costs. Commodity shifts are feast or famine, depending on geography. Consider the reversals of fortune for Dakota boomtowns and West Virginia coal country. As a consequence, smaller railroads need to be innovative and adaptive.

## New Ideas, New Energy

At the 2013 Rail Trends conference, another Class II operator stole the show. Indiana Rail Road is a perfect example of the new energy that is bubbling beneath the tracks.

"We conducted a study three years ago that indicated 120,000 to 140,000 containers move from Asia into Central Indiana every year," Hoback explained. "These containers are all going through Chicago. The problems are long transit times getting into Los Angeles-Long Beach from China, congestion in and around Chicago, and a lot of dwell time. As a result, containers often sit on the docks in southern California and Chicago.

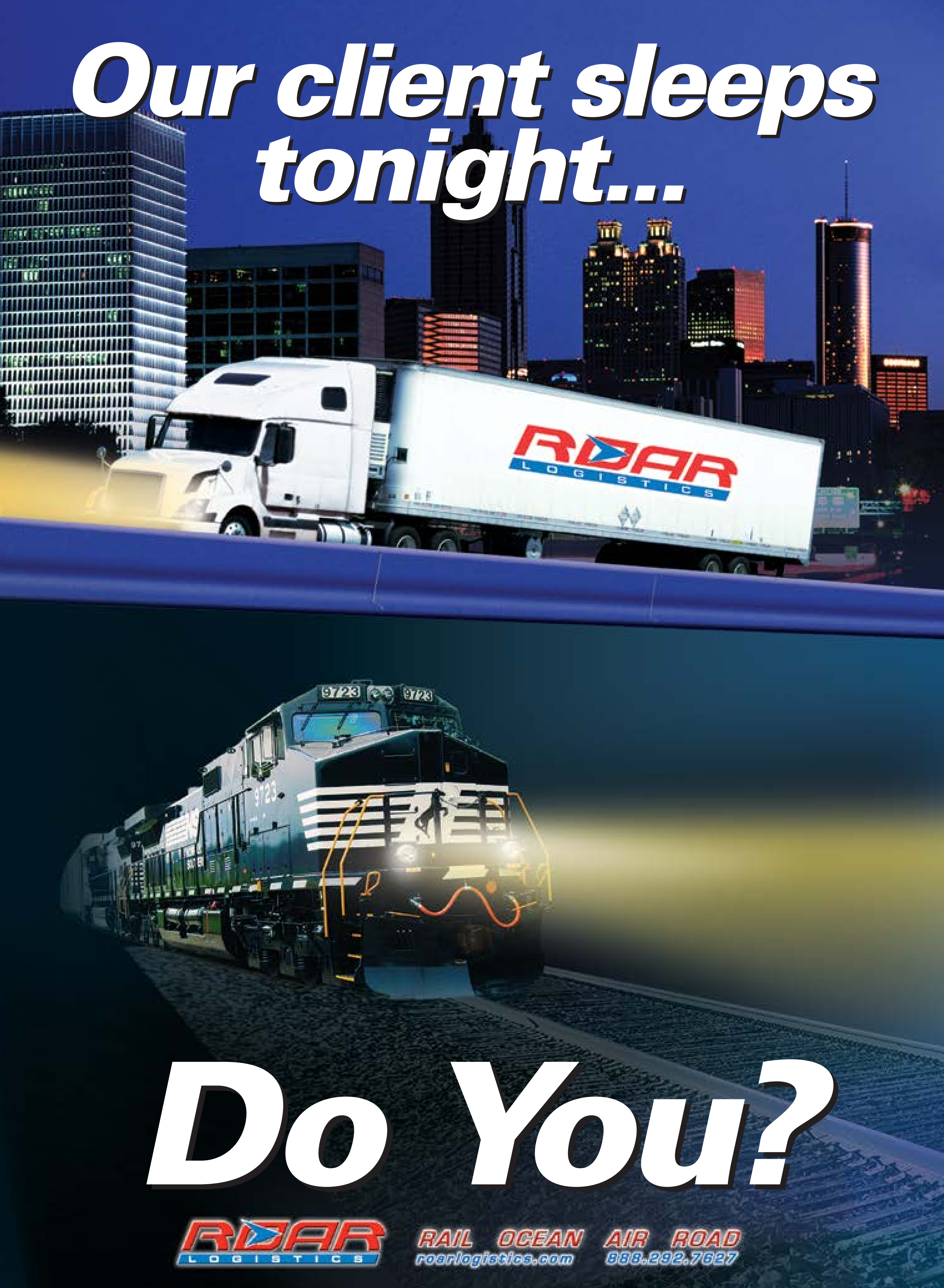
"We talked with Canadian National (CN) about capturing this market by creating an all-rail service from Asia into Central Indiana," he added. "CN thought it was a great idea."

Partnering with CN, Indiana Rail Road is bringing containers from British Columbia's Port of Prince Rupert into Central Indiana in as few as 20 days—compared to four weeks going from Los Angeles to Chicago, and drayage inland from there. Shippers can cut one week out of their supply chain.

As an added bonus, Indiana Rail Road is able to load most of the empty containers going back to the West Coast and Asia with agriculture product.

As rumors of U.S. re-industrialization amplify, short line railroads will play an important role as both the first- and final-mile legs to trunk lines.

"Increasingly, companies involved in site selection are looking for not only rail access, but access on regional or short lines because of the flexibility they provide," said Hoback. "The fact that we can give these shippers access to more markets is an advantage." ■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A READER PROFILE REUNION

# Where are They Now?

Lewis Dibert
*Class of 2003*

Greg Schwartz
*Class of 2007*

Debbie Jackson
*Class of 2007*

Fred Clark
*Class of 2008*

*Inbound Logistics* checks back with some of the supply chain professionals we've introduced over the years in our Reader Profile column. Enjoy this visit with four old friends, each of whom has moved on to new supply chain adventures.

**By Merrill Douglas**

# Lewis Dibert

## HAVING THE TILE OF HIS LIFE

**Profiled March 2003**
Director of logistics, Red Gold Inc., Indianapolis

**2004**
Warehouse consultant,
Power Great Lakes, Chicago

**2004-2006**
Regional director distribution operations,
Lagasse/United Stationers, Chicago

**Since 2007**
General manager, regional distribution center,
Mohawk Industries/DalTile

When we last spoke to Lewis Dibert in 2003, he was up to his ears in tomatoes, working as director of logistics for Red Gold, an Indianapolis-based tomato grower and processor.

He left that job in 2004, first taking on a temporary project—setting up a warehouse for small engine manufacturer Power Great Lakes. Then, he took charge of distribution in the northeastern United States for Lagasse, a unit of United Stationers that distributes janitorial supplies.

Dibert had been there just six months when Lagasse bought paper products distributor Sweet Paper, and asked him to integrate some new distribution centers in the Southeast, acquired as part of the sale. Between them, Lagasse and Sweet operated one dozen facilities in that region; Dibert cut that number down to nine.

"It was a process of consolidating the DCs, rationalizing the product lines, then laying out the facilities," he recalls. "Putting all the pieces together was a lot of fun."

The puzzle he assembled included a fleet of trucks attached to each facility. "Consolidating those fleets, and deciding how to best serve customers while making the change transparent to them in their daily operations, was a challenge," Dibert says.

Dibert also oversaw implementation of the company's first warehouse management system, and implemented some high-volume picking and shipping operations to support Sweet Paper's e-commerce business. In addition, he managed the loading of ocean containers bound for the Caribbean.

In 2007, Dibert moved to Maryland when he accepted a job as general manager of the Eldersburg regional DC run by DalTile Corporation, a unit of Mohawk Flooring. DalTile supplies tile and stone flooring to big-box chains and independent retailers; it also sells through its own nationwide showroom network.

The company operates six manufacturing plants in the United States, and one in Mexico. It also sources materials from around the world. The Eldersburg DC receives 10 to 15 containerloads of imported product each day. "We also receive 40 to 50 truckloads daily, and ship out 60 to 70," Dibert adds.

Since arriving at the Eldersburg DC, Dibert has worked steadily to improve operations. One area he's especially proud of is safety performance. "We've significantly reduced the number of injuries – and for more than one year, we've had no injuries at all," he says.

Improved equipment maintenance and processes have contributed to that success. So has a program that encourages associates to look out for unsafe behavior and correct one another.

A safer DC is also a more productive facility. "Making safety changes in the operation ultimately improves efficiency," Dibert notes. "And taking better care of the equipment reduces downtime." New performance-based pay incentives have helped to boost productivity as well, he adds.

Having managed logistics for items as diverse as chemicals, engines, tomato products, cleaning supplies, and tiles throughout his career, Dibert finds the process similar from one business to the next. "In general, it's pallets in, pallets out," he notes. But DalTile does pose some special challenges.

One challenge is that tile is heavy, fragile, and expensive, so DC workers must learn to handle it correctly. "If workers put pallets down too hard, they will break the product," Dibert says. "And sometimes damage goes undetected, because it happens inside the box."

To protect his products, Dibert has had to design specific processes for moving tile, then teach those processes to associates.

Another big challenge, especially in a company handling more than 6,000 SKUs, is assembling orders correctly for customers who pick them up at retail outlets. A single bathroom renovation, for example, might require floor and wall tiles, plus mosaic tile for the shower. "It's important that we get all those items together correctly and ship them out on time," Dibert says.

Often, fulfillment must happen fast. "Although tile is one of the last things customers install during a renovation, they never seem to order it until the day before they need it," he notes.

Dibert's job at DalTile is rarely quiet, and that's a good thing. "This organization is growing and expanding," he says. "Management is driving the business forward, with solid direction."

# Greg Schwartz

## STAYING IN GREAT SHAPE

**Profiled October 2007**
Vice president, supply chain management, Jamba Juice, Emeryville, Calif.

**Since 2013**
Senior vice president, supply chain, ViSalus, Los Angeles

It has been more than six years since we spoke with Greg Schwartz. When we profiled him in 2007, he was blending things up in a new job as vice president of supply chain management at Jamba Juice, the quick-service restaurant chain specializing in smoothies and other healthful products.

When we caught up with Schwartz again recently, we found him still promoting the cause of health and nutrition, this time as senior vice president, supply chain at ViSalus, based in Los Angeles and Troy, Mich. ViSalus sells a line of food, beverages, and supplements to help people lose weight and grow more fit.

Schwartz stayed with Jamba Juice until late 2012. One of his big accomplishments there was his effort to trim the cost of goods—from the fruit that his team sourced from 26 countries to cups, straws, and other consumables and equipment.

"In the nearly six years I worked for Jamba Juice, my team reduced our cost of goods by more than five percent," says Schwartz. To achieve that goal, they consolidated suppliers when possible, optimized the supply chain, and solicited ideas for continuous improvement.

Some improvements involved reformulating products so Jamba Juice could better ensure the supply, or produce them less expensively while preserving the flavor and health benefits. Changes to packaging helped reduce costs and improve sustainability.

Schwartz's tenure at Jamba Juice covered the period when the company added sandwiches, salads, and other fresh foods to its menu. "We faced a lot of challenges connected with distributing those products, which have a significantly shorter shelf life than the products we were used to," he says.

Schwartz started at ViSalus after his family moved from the San Francisco Bay area to Los Angeles. "Our team handles ingredient and packaging sourcing; supplier management; and logistics and distribution," he says.

One big difference Schwartz encountered in his new job was the direct-to-customer distribution model. ViSalus places great emphasis on those deliveries. "We want the box to be in pristine shape," he says. "And when a customer opens that box, we want the product and literature inside to look beautiful."

ViSalus uses contract manufacturers to produce its product and primary packaging. It also contracts with third-party logistics providers to assemble product into kits, put the kits into secondary packaging, then hand them off to small-package carriers.

Schwartz and his team work closely with internal stakeholders in marketing, research and development, sales, and other departments. "We're heavily involved in what the kits look like—the materials used, the thickness of the boards—everything that goes into making sure that we keep the product in the best shape possible, so customers say, 'Wow!' when they open the box," he says.

The team also works closely with manufacturers and distribution partners. "We have implemented scorecarding and measurements to hold one another accountable, as well as other strategies to continuously improve the business," Schwartz adds.

As ViSalus strives to delight its customers, it must also keep an eye on costs. To maintain the optimal balance between quality and economy, the company continually reviews its materials and processes.

"We conduct shipping tests, as well as product integrity tests," Schwartz says. In addition, the team considers the pros and cons of various packaging modifications. For example, "If we make the foil pouch a little thicker, can we make the corrugate thinner?" he says.

As he did at Jamba Juice, Schwartz also considers opportunities to save money by reformulating products. "We look into new technologies or materials that may improve quality or cost less," he says. "We also consider whether we can eliminate higher-cost ingredients without having any negative impact on flavor or nutrition."

Schwartz draws one more parallel between his new job at ViSalus and his earlier work at Jamba Juice, Safeway, and Kraft: all four companies gave him the chance to work with high-quality products and assemble terrific groups of employees.

"Having people on my team who are better than I am, who have great potential and the drive to get things done well, is what makes me successful," he says. "We're currently in the process of building a great supply chain team at ViSalus to help achieve all our goals."


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# Debbie Jackson

## THE CAMPUS CONNECTION

**Profiled April 2007**
Supply chain team lead, procurement, Johns Hopkins University, Baltimore

**2007-2009**
SAP business process expert, Alpha Natural Resources, Linthicum Heights, Md.

**2010-2013**
Director of purchasing and contracting, Anne Arundel Community College, Arnold, Md.

**Since 2012**
Senior director of strategic sourcing and procurement, The Catholic University of America, Washington, D.C.

Debbie Jackson was just coming off a massive SAP implementation when we met her in 2007. Leading the supply chain procurement team on the project at Johns Hopkins University in Baltimore, her job was to get the Supplier Relationship Management module of the new enterprise resource planning (ERP) system running smoothly.

Just as her life was starting to settle down again, Jackson took off on a new adventure. A headhunter tapped her for a job as SAP business process expert at Alpha Natural Resources, a coal company based at the time in Maryland.

Jackson and her husband rented out their Baltimore townhouse and moved to Howard County, Md., putting her closer to the job at Alpha. There, she oversaw enhancements to an existing ERP system, with a focus on purchasing.

"One huge project was cleaning up the vendor master—the database of all the company's suppliers," Jackson says. "I also had the opportunity to visit some coal mines, although I never had the desire to go down into one."

When Alpha moved its headquarters to southwestern Virginia, Jackson returned to higher education, taking a job as director of purchasing and contracting at Anne Arundel Community College in Arnold, Md. While there, she also taught an online course, Business and its Environment. "I was able to share with students some of what I'd learned and applied in my work, in addition to the general theories covered in the textbooks," she says.

In 2012, while hunting up job leads for a nephew who was a recent college graduate, Jackson noticed that The Catholic University of America—where she had worked years before as a purchasing manager—was seeking a senior director of strategic sourcing and procurement. Jackson pursued and won that position, prompting many family jokes about the unexpected payoff from her young relative's job search. "I gave my nephew an extra-special Christmas gift that year," Jackson says.

Since then, Jackson has been riding the daily commuter train to Washington, D.C. Reporting to the vice president of finance and treasurer at Catholic, she designs and manages strategies to ensure that all university departments get the products and services they need at the best possible price.

"I provide high-level contract and supply management expertise," Jackson says. "I touch base with nearly everyone on campus, and handle the complex requests for proposals." One attractive aspect of the job, she says, is that any time she saves a program money, those savings go right back into that program's budget, making funds available for other purposes.

One of Jackson's current goals is to better leverage the university's ERP system. "I've identified some ways to improve product and service procurement," she says. One important area of focus is familiar to Jackson from her days at Alpha: the vendor master database.

In years past, vendors filled out paper forms with information about their businesses, then faxed them to Catholic University, where an employee entered the data into the ERP system. "We moved that paper form to an online process," Jackson says. Vendors are now responsible for entering and updating their own data.

Now that the forms are online, Jackson's team adds new fields—such as each vendor's email address, and the commodities it supplies. Having that information streamlines the procurement process. "Orders are directly pushed out of the ERP system," she explains. That, in turn, helps Jackson keep better track of what the university buys, and from whom.

The fully automated system also helps Catholic University do more outreach to new suppliers, especially smaller companies based near the campus. "In addition to putting our requests for proposals on the Web, we have suppliers we can solicit," Jackson says. "It makes sense to build supplier relationships within the community."

While all this is happening, Jackson is also hard at work on another project: earning a doctorate in education from the Community College Leadership Program at Morgan State University. She started the program during her days at Anne Arundel, when the concentration was a natural fit for her.

Although she no longer works at a community college, Jackson is still deriving a great deal of value from this academic pursuit. "If you're a leader, you acquire skills you can take anywhere," she says.

# Fred Clark

## DEEP DRILLING

**Profiled May 2008**
Director of support services, Kingfisher Regional Hospital, Kingfisher, Okla.

**2009-2013**
Operations manager, later operations supervisor, Universal Hospital Services, Houston

**2009-2013**
Sergeant major, Texas State Guard

**Since 2013**
Logistics and compliance manager, major supplier to the oil extraction industry, Houston

Fred Clark's life came full circle in 2013. Since 2006, his career had focused on the healthcare arena. But when a leading supplier to the oil extraction industry tapped him for a job as logistics and compliance manager at one of its Houston manufacturing plants, he seized the chance to return to a firm he'd been close to all his life.

"My dad retired from this company after 44 years of service," says Clark, who asked that his employer not be named. Clark essentially grew up in the firm, as well as working there himself from 1989 to 1992. Until the company recruited him for his current role, though, he never imagined going back.

When we met Clark in 2008, he was working as director of support services at Kingfisher Regional Hospital, a 25-bed critical-care facility in Kingfisher, Okla. He managed inventory and equipment repairs, and oversaw operations and housekeeping staff.

That job took a new turn when Kingfisher decided to replace the 20,000-square-foot facility with a new building more than three times that size, with state-of-the-art surgical suites and diagnostic equipment. Clark became one of the project's two managers. "Along with the X-ray director, I was responsible for making sure the expansion proceeded properly—from pouring the concrete until the day we opened the doors for the first patients."

Two months after those first patients arrived, Clark returned to his native Texas to start work as an operations manager for Universal Hospital Services (UHS). Hospitals lease equipment from UHS to supplement their assets during busy periods. Clark managed the relationship with one hospital in Houston. "I made sure the hospital had the medical equipment it needed, and that this equipment was ready, clean, and functioning properly," he says.

That role came with the occasional dose of drama. Take the time a nurse called Clark at 2 a.m. to report that the hospital had run out of fresh intravenous pumps after 40 sick people had just arrived from the nearby airport, all off the same plane.

"I jumped out of bed," Clark says. By 2:30, he was at the hospital, locating, cleaning, and testing pumps to get them ready for action. "The emergency room was filled with people and baggage, everywhere you looked," he says. "I never found out why they were all sick, but I suspected food poisoning."

Clark served in that position for two years. Then UHS promoted him to district operations supervisor, responsible for more than 300 hospitals and long-term care facilities across 27 counties. "I oversaw staff who were in their vehicles all day, driving to and from the hospitals, dropping off and picking up equipment," he says.

He also joined the Texas State Guard, serving with a medical unit one weekend each month and during special events such as Operation Lone Star, which offers free medical care to low-income people near the Texas-Mexico border. As a sergeant major, Clark was responsible for the unit's enlisted members, including doctors, nurses, paramedics, respiratory therapists, and other professionals.

Today, Clark is back in the energy industry, working in a plant that makes blowout preventers—devices that control the flow of oil or gas from a well during drilling. He oversees teams that import components used in production; export finished product to customers; ensure compliance with all federal, state, and local laws; and manage domestic trucking. Clark is also in charge of the plant's new foreign trade zone, due to open in early 2014.

Most of the plant's customers are companies in South Korea or Singapore that build drill ships. Once a customer places an order, it takes about 18 months to produce a blowout preventer. Before that project is complete, though, the plant delivers many smaller components. "Then, when the complete project ships, we do all the paperwork so it clears customs in the United States and in the destination country," he says. "We take the products to a shipping terminal here in Houston, where it's loaded on a ship, and off it goes."

One of the most challenging and interesting aspects of the job is its sheer variety, Clark says. Any given day could find him wrestling with import or export regulations, dealing with personnel dilemmas, or fielding any number of logistics issues.

Topping Clark's agenda for the future is simply to learn more about the job, especially the complexities of foreign trade regulation. "I'm sure I will go back to school, and take some business law classes," he predicts.

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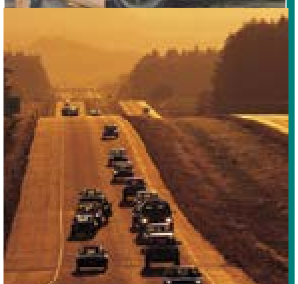

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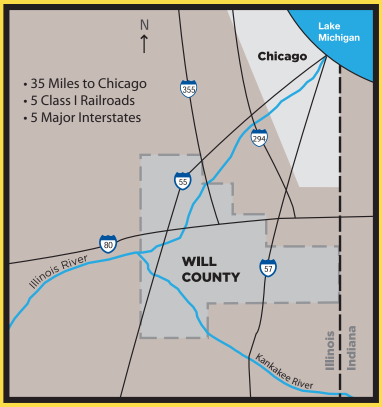


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## SITE SELECTION:

# FOLLOW THE SIGNS TO COMPETITIVE ADVANTAGE

The ideal combination of logistics and business assets points manufacturing and distribution site selection decisions in the right direction.

**By Joseph O'Reilly**

Every company prioritizes different factors when choosing the best location for a distribution center, or configuring the perfect logistics alignment between supplier, manufacturer, retailer, and consumer. It's all about finding the right combination of geography, labor availability, financial incentives, and supply chain partner access. And in today's demand-sensitive environment, identifying a strategy that embraces supply chain impulses while allowing room for change also plays a big role.

Companies have more options than ever when choosing a site. They can lease, buy, build-to-suit lease, and partner with third-party logistics (3PL) providers to manage dedicated operations or as part of multi-tenant arrangements.

The variety of facilities businesses seek has evolved, too. Shifts in consumerism and commerce have transformed warehouses into hubs of opportunity, equipped with cloud technology, mobility applications, and automated materials handling equipment; and purposed for operations such as value-added manufacturing, packaging postponement, and crossdocking.

Here's a look at some factors businesses weigh when selecting a new manufacturing or distribution site.

## Primed to Serve Online Shoppers

The explosion of e-commerce continues to challenge convention, especially when it comes to how retailers deliver products to customers.

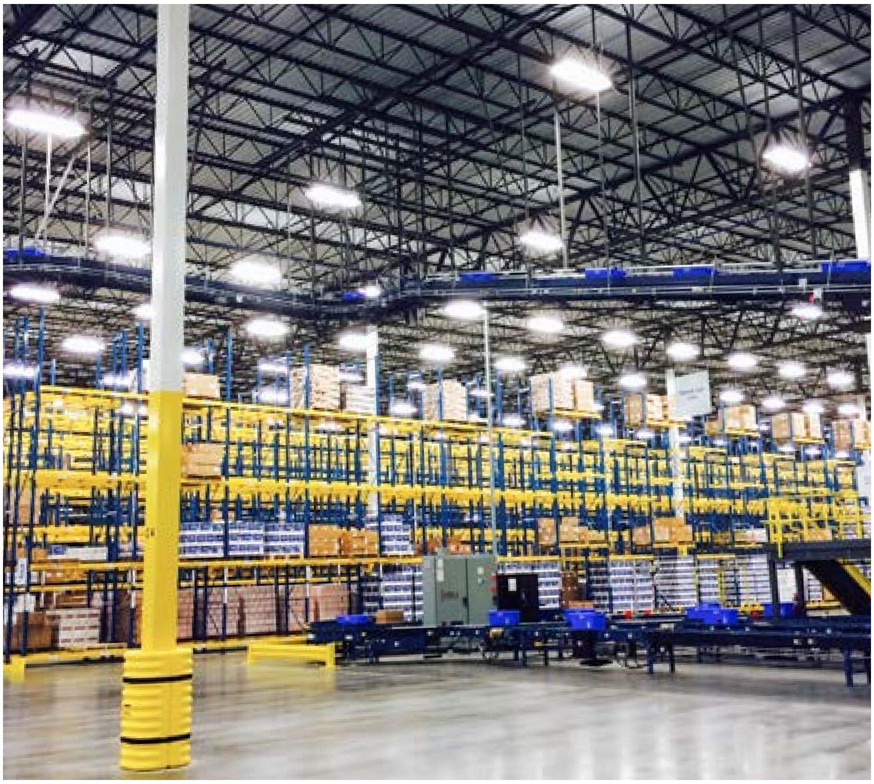
"Omni-channel is the widely used term to describe the need for balancing in-store sales with e-commerce," explains Chris Gutierrez, president of KC SmartPort, an economic development organization in Kansas City. "The real estate needs for a true e-commerce fulfillment center are much different than a traditional distribution facility. Fulfillment centers need more workers and employee parking—compared to trailer parking—as well as higher cube, and an emphasis on materials handling. These facilities generally are built to suit the tenants' unique needs."

The required IT and materials handling sophistication often requires online retailers to start from scratch. While most are looking for DC operations in the same general locations as brick-and-mortar retailer warehouses, facilities are tasked differently—which is changing some real estate requirements.

"E-commerce slows growth in overall demand for logistics facilities: retailers tend to store less inventory at intermediate points between manufacturers and customers, hurting secondary and tertiary locations," states *2013 Emerging Trends in Real Estate*, a report by PWC and the Urban Land Institute. "Demand for specialized space tailored to distributor needs forces more old product into obsolescence in key mid-country gateways such as Dallas, Chicago, and Atlanta."

This statement suggests an abundance of obsolete capacity, which will likely continue. Today's fixed-cost aversion provides even more reason for e-tailers to outsource these requirements to 3PLs, and drive location decisions based on their own needs, as well as 3PL capabilities.

One such retailer is Salt Lake City-based Overstock.com. In October 2013, the company debuted a new distribution operation in Jonestown, Pa. The online retailer is leasing dedicated space within a 900,000-square-foot, 650-person staffed facility operated by Santa Ana, Calif.-based Ingram Micro Logistics.



**Health products retailer The Vitamin Shoppe established a new distribution center outside Richmond, Va., in 2012. The state provided a $200,000 grant for the project, as well as additional support for recruiting and training the facility's workforce.**

One reason the DC made sense for Overstock.com is its highway access. The complex is a few miles north of where I-81 and I-78 diverge outside Harrisburg—150 miles due west from New York City. Pennsylvania's I-81/I-78 distribution corridor is fast becoming a popular destination for industrial real estate. Circumventing the congested I-95 artery, the area provides access to New York City, Philadelphia, Baltimore, and Washington.

Real estate prices are another benefit of the location. Warehouse lease rates in central Pennsylvania are well below the U.S. average—$4.75 per square foot in 2013—and $1.50 less than in northern New Jersey.

Overstock.com's decision to settle in Jonestown, however, runs much deeper than transportation accessibility and lease rates. The retailer wanted to procure dedicated space in a multi-tenant facility. Apart from a failed DC experiment in Indiana several years ago, the company has distributed all products from its primary Salt Lake City location since its startup in 1999.

"We were looking for an East Coast location to speed deliveries to consumers," explains Stormy Simon, co-president, Overstock.com. "We also needed a location that would be flexible to our various catalog categories.

"We ship everything from furniture to jewelry, so we require a range of handling capabilities," he adds. "We were looking for a facility that could adapt as we added more inventory."

Multi-tenant DCs provide that level of flexibility. Just as inventory turns over, the operation is continuously changing.

"We're always re-evaluating racking to find the optimal setup," says Curtis Matchett, senior operations manager, Ingram Micro Logistics. "The configuration depends on the number of SKUs, pick faces, and customer requirements."

Recently, the facility has received an increase in mixed truckload shipments, which Matchett attributes to more just-in-time deliveries as shippers pool freight with others to max out loads, rationalize asset requirements, and reduce costs.

## Overstock.com Expects Big Things From its East Coast Distribution Center

Inside Ingram Micro Logistics' Jonestown, Pa., distribution center, flux is a constant. The warehouse is segmented into five inter-connected buildings, each awash in its own whir, serving unique functions and customers.

Nine miles of conveyors wend their way up, down, and through various tiered pick modules, racking and sortation systems, and mezzanines, disappearing inside the labyrinthine operation, only to appear again elsewhere. The facility's IT backbone is anchored by SAP's order management solution and Ingram Micro's proprietary WMS.

The 3PL's operation features a wide range of product categories and brands from its legacy computer hardware and software business to LG white goods, Hasbro toys, and assorted Apple returns. Overstock.com occupies Building 5, where its furniture shares space with other non-conveyables.

"We just rolled out this operation, so we only have large items in the warehouse right now," explains Stormy Simon, co-president, Overstock.com. "During our site selection process, we wanted to ensure the service provider could eventually transition to multiple categories."

One week before Overstock.com went live at Ingram Micro's Jonestown DC in October 2013, it executed a "golden transaction," where all parties involved tested the system. They brought in three vendors, took five SKUs from each, generated a purchase order, ran it through SAP and the warehouse management system, then initiated an outbound order.

On October 7, the online retailer started moving cartons of ottomans, tables, and chairs through the Ingram Micro facility.

Overstock.com likes using 3PLs, in part because of the latitude they provide. "We select 3PLs based on our needs and their flexibility," says Simon. "The one we work with now may not fit where we are tomorrow."

Today, however, Overstock.com finds Ingram Micro Logistics' DC a perfect fit.

**Overstock.com chose Ingram Micro Logistics' DC in Jonestown, Pa., for its access to East Coast markets and flexible handling capabilities.**

"Shippers aren't waiting to build full truckloads," he explains. "They are shipping breakbulk with consolidated carriers more frequently."

Industry pressure is forcing online retailers such as Overstock.com to reconsider their distribution networks. Competition from sites such as Amazon requires them to deliver to market faster and more efficiently.

Opening the Jonestown distribution location helps get Overstock.com closer to its customers. And its vendors get an added bonus—as DC volume builds, they will be able to leverage greater scale on outbound orders, thereby reducing transport costs.

### Keeping Suppliers Close

While omni-channel growth has shaped site selection priorities for consumer goods manufacturers and retailers, other sectors place more emphasis on supplier and just-in-time production factors.

The automotive industry, for example, has always paid careful attention to facility location, valuing port and intermodal accessibility, as well as Foreign Trade Zones. A recent trend among suppliers is to locate closer to manufacturer production centers, which suits just-in-time assembly operations.

Spanish parts manufacturer Grupo Antolin is investing nearly $16 million in a 150,000-square-foot automotive manufacturing facility to supply Ford's Kansas City assembly plant in Claycomo, Mo.

The move follows General Motors' announcement in fall 2013 that it was relocating a $200-million parts plant from Michigan to Arlington, Texas. By positioning the new stamping facility next to the production complex, GM expects to save $40 million in logistics costs annually.

Cost savings were a key consideration in Grupo Antolin's decision to locate in Kansas City, as well. "Many suppliers are required to operate a sequencing or manufacturing facility within a 10- to 15-mile radius of the plant," explains Gutierrez. "Kansas City continues to see more of this supplier base locate manufacturing operations, which brings more jobs and higher pay."

Complex, just-in-time manufacturing operations have long benefitted from having suppliers located nearby, but transportation will always be one competency companies contemplate as they shop around for new sites. But even those requirements are changing.

As intermodal adoption grows, companies want DCs positioned on or near intermodal ramps. That's becoming a premium in today's market.

"The transportation cost savings outweigh the real estate, local, and state incentives," Gutierrez says. "Those savings

Many automakers require that suppliers locate near their production facilities to support just-in-time assembly operations.

generally are more than half the cost for a new facility."

### Welcome to the Neighborhood

Another top concern for site selection decision-makers is public support for economic development. Communities that go the extra mile by pre-permitting sites or pre-committing to incentives allow tenants to hit the ground running when they consummate a deal.

Companies often fixate on the upfront incentives without much thought to recurring costs 10 to 20 years down the road, notes Suzanne Clark, spokesperson for the Virginia Economic Development Partnership (VEDP), based in Richmond.

The way the economy is trending, some businesses find it difficult to take a longer view of future considerations. For example, Virginia's flat six-percent corporate tax rate has remained unchanged for 42 years. Compare that to a neighboring state such as Maryland, where the same tax burden has grown from seven percent in 2003 to 8.25 percent in 2013, and it's an important distinction—if you're in it for the long haul.

Virginia has a lot going for it beyond the ledger. In addition to its central East Coast location, the state offers an extensive system of highways, railroads, airports, and seaports. Virginia is also a right-to-work state. But when it comes down to "dollars and sense," incentives can make all the difference.

"Manufacturers receive broad sales tax exemptions for purchases of machinery, tools, replacement parts, and raw materials used in the production process," says Clark. "Virginia does not tax accounts receivable, inventory, computer software, or other intangibles."

These types of concessions recruit and retain business. Digital Realty Trust, a New York City-based data center and co-location solutions provider, plans to invest as much as $150 million by 2015 in its Loudon, Va., operation because of the state's data center sales and use tax exemption.

More telling, in 2012, Virginia beat out North Carolina to secure nearly $40 million in direct and indirect investment from North Bergen, N.J.-based health products retailer The Vitamin Shoppe to set up a new DC north of Richmond. Virginia Governor Bob McDonnell approved a $200,000 grant from the Governor's Opportunity Fund to assist Hanover County with the project. Through its Virginia Jobs Investment Program, the Virginia Department of Business Assistance provided additional funding and services to support the company's recruitment, training, and retraining activities.

While not all site selection teams will find such benefits in their ideal location, many will reap great rewards from working with local economic development organizations. For others, finding the right skilled labor pool, outsourced logistics partner, or supplier base will drive site selection decisions.

This is the essence of site selection in today's new economy: It relies as much on supply chain strategy as location. ■

# The New 3PL Partnership
## More Bang for Your Buck

Sure, third-party logistics providers will tune your transportation transactions. But their real value lies in strategic relationships that optimize your entire enterprise.

**by Joseph O'Reilly**

# The New 3PL Partnership

Manufacturers and retailers used to value third-party logistics (3PL) providers for their physical assets. The very idea of outsourcing transportation and logistics functions evolved as a procured means to a fundamental fix. Pricing was king. Contracts were short. Performance was measured in three-year bids.

That has all changed. Today, companies appreciate 3PLs as much for their cerebral approach to the mundane as their ability to perform the exceptional.

Transactional relationships have given way to strategic partnerships. Trust trumps cost – at least in the short term. And long-term gainsharing has become the hook shippers and their third-party logistics providers hang their hats on.

The idea of a 3PL as some overarching seer is by no means new. Consultants have long touted their neutrality, as well as human and IT intelligence capabilities, thus paving the way for non-asset intermediaries beholden to no one but the customer.

Given the manner in which economic uncertainties have pressed companies to analyze all business functions more frequently, 3PLs provide the variable-cost flexibility to actually act on these urges. Moreover, growing recognition that outsourcing is seldom a one-stop solution provides shippers with even more incentive to consider multiple options for different situations. This forces service providers that want long-term partnerships to check their self-interest at the door, and embrace a more altruistic approach.

At the same time, it also provides 3PLs with new opportunities to assume a more consultative role with customers, stretching beyond simply execution to more strategic designs.

"If 3PLs only focus within a transaction tactical activity, they will always only be transactional tactical providers," says Sean Coakley, senior vice president at Kenco Group, a 3PL based in Chattanooga, Tenn. "The question is, how do 3PLs focus on a bigger picture value for their customers?"

## It's About Time

Kenco measures success in years—which provides a good indication of how the 3PL has gradually grown its business from one 100,000-square-foot warehouse in 1950 to more than 100 facilities and 30 million square feet across 25 states and Canada.

Kenco's client roster includes Whirlpool, Cummins, DuPont, Kohler, Green Mountain Coffee Roasters, and GlaxoSmithKline. The average customer relationship spans 17 years, a remarkable achievement any way you look at it.

But that number is even more telling when you consider the three-year itch many purchasing organizations get when they have to re-bid business. Demonstrating consistent value, year in and year out, lays the foundation for long-term success.

"The 3PL's responsibility is to look outside the four walls, and find creative ways to drive unique value," Coakley explains. He believes the difference between transactional relationships and strategic partnerships is trust. Ultimately that only comes with time.

For example, for 30 years, Kenco has been managing a variety of transportation and warehousing functions for one customer. Recently the 3PL's materials handling organization got involved with the client's manufacturing and warehousing operations.

In so doing, Kenco wound up creating a national project to manage the company's materials handling fleet across much of its network, providing guaranteed rates for service, service parts, and maintenance. The company previously partnered with small mom-and-pop shops across the country to source those needs.

# The New Partnership

“Now the company uses one service provider, saving more than $10 million over the life of the initial contract,” says Coakley. “That’s one value it never considered part of a 3PL relationship.”

The impetus for such change is often 3PL-driven. That’s the value-added sell. Still, shippers have to be receptive to such entreaties. In a true partnership, they know the 3PL is looking out for their best interests. Building this level of trust often takes time. But even shorter-term engagements offer ways to grow collaboration to a point where it becomes almost symbiotic.

## All 4 One

Partnerships in today’s environment are growing more transformative, especially within the realm of fourth-party logistics (4PL), according to Paul Mooney, senior director of operations for San Mateo, Calif.-based Menlo Worldwide. The 4PL model offers a platform to get companies thinking about long-term strategy; developing an idea of what they want their future supply chain state to look like; and creating incremental projects that work toward what Mooney calls a “true north vision.”

“We try to work from the inside out, and hang wins on the board,” he explains. “Once we start showing customers this methodology works—and that we can deliver—we are able to get into radically bigger projects.”

The process might begin with an effort to fix truckload rate anomalies, for example, and progress toward a larger project, such as network rationalization. “The strategy or transformation will never sustain itself, nor will it be implemented, if the 3PL can’t deliver quick wins and demonstrate that its methodology actually works,” Mooney says.

Over time, the customer usually becomes empowered to take control over some original projects, and the service provider moves on to bigger things.

As a transformative force, the 4PL model actually drives 3PL outsourcing. The difference between the two activities ultimately comes down to scope. In a traditional transactional role, the 3PL will hold on to scope—managing a warehouse, for example. With a 4PL model, the scope ebbs and flows. The service provider scales resources depending on different skill set requirements that materialize.

“In all its 4PL arrangements, Menlo always migrates to execute; we just don’t execute everything,” says Mooney.

He cites one example where Menlo acts as a 4PL to manage a customer’s global freight. It also serves as a 3PL for one warehouse in the network. Different service providers—all of whom interface with Menlo—manage the seven other DCs. When the customer decided to outsource warehousing, it did so competitively. Menlo didn’t win all the bids—either because of geographic considerations or because it wasn’t the best solution for that need.

“It becomes more of a strategic partnership,” says Mooney. “The 3PL is less concerned with committed revenue and more concerned about providing value to the customer. If the 3PL offers value and an opportunity for savings, the partnership just grows.

“It’s liberating, because rather than worrying about how to sweat a 100,000-square-foot warehouse, we help customers deliver to the bottom line, and we get compensated for that,” he adds. “Our engagement organically grows based on fulfilling that value.”

Coakley perceives a similar progression. “Companies perform based on how they are measured,” he says. “If you measure 3PL partners by getting into the ‘how,’ there will be minimal strategic conversation. Everyone will be focused on tactical activities.

“If shippers can get their team to stop focusing on the ‘how’ and instead concentrate on the ‘what’, they can move into a governance role,” he continues. “Essentially, the shippers assume the 4PL role, as they should.”

While transformative change can catalyze these types of collaborative 3PL partnerships, it often develops as an organic response to pain points.

G&T Industries, a Byron Center, Mich.-based manufacturer and distributor of foam, hardware, upholstery, and wall coverings, has a long relationship with Ryder’s Fleet Management Solutions (FMS) division. G&T leased tractors from the Jacksonville, Fla.-based 3PL and used its own drivers to transport product.

## In Dedicated We Trust

In 2010, G&T consolidated three Pennsylvania warehouses into one facility in Reading. At the time, the manufacturer and Ryder held discussions about growing the lease agreement into a dedicated operation, but plans fell through. In 2013, G&T decided to make the move.

“G&T was trying to establish a stronger foothold with its customer base in Pennsylvania and the eastern United States,” explains Gregory Olshefski, logistics manager for Ryder Dedicated. “It wanted to get out of the transportation business because it recognized that managing drivers and DOT compliance wasn’t its strong suit. That’s not the business it’s in.”

With new Hours-of-Service rules and CSA requirements, and countless challenges and costs associated with recruiting and retaining qualified drivers, G&T no longer wanted to deal with labor issues. It wanted to concentrate on servicing customers. So the company decided to lift the labor burden and go with a dedicated operation. After an RFP bid, Ryder won the business.

The transition was seamless. “G&T is leasing the same type of equipment, but now Ryder provides drivers, management, and DOT compliance,” explains Olshefski. “We’re also working closely with G&T to develop metrics and key performance indicators to analyze potential areas for service and cost improvements.”

G&T had always lacked the flexibility to react to emerging customer requirements. By leveraging Ryder’s assets to meet its needs, the manufacturer has been able to free up resources and concentrate on serving its own customers better—which offsets the added cost of outsourcing a dedicated operation.

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# The Consultative Sell: Hitting the Target

Finding shelf space at a big-box chain is competitive business. Most vendors are just hoping to get within range of a retailer such as Target, where product quality and integrity are at a premium. Dr. Raymond Laboratories (DRL) needed a bullseye.

In 2010, the subsidiary of South Korea-based NeoPharm looked to enter the U.S. retail space with its brand of Atopalm skincare products. To help facilitate the transition, DRL partnered with Port Jersey Logistics, a Monroe, N.J., third-party logistics provider. Together they were challenged with growing Atopalm's market presence through a phased approach.

With Port Jersey's assistance, the company orchestrated a strategy that started small, then eventually broadened to a larger customer base.

"Our strategy was first to sell exclusively via online retailers and our own website," says Jim Plaza, president of Plaza Consulting Group, which represents Dr. Raymond Laboratories. "Once the brand gained a foothold, we engaged a team of independent sales representatives to call on small brick-and-mortar stores."

As DRL's presence in the United States gained traction, Port Jersey Logistics was there to help meet new requirements.

"The relationship evolved from small orders to doctors' offices to the current state of mega-store orders and e-commerce fulfillment," explains Jim Lowman, general manager for Port Jersey Logistics & Tyler Distribution Centers.

In 2011, the line was picked up by several more online retailers, and the launch of a brand-specific website further expanded DRL's U.S. footprint. Port Jersey Logistics was primarily tasked with pick-and-pack fulfillment to meet these e-commerce demands.

One year later, ULTA Beauty, a chain of cosmetic and personal care boutiques with 550 locations across 45 states, started selling Atopalm. This exposure provided leverage to start looking at a bigger target.


**To grow the market for its Atopalm skincare products, Dr. Raymond Laboratories tasked Port Jersey Logistics with meeting retailers' packaging and shipping requirements.**

### Changing Requirements

The move from selling exclusively online to brick-and-mortar retailers presented some different challenges for DRL.

"When we sell to online retailers, the process and paperwork are uniform; the process becomes a simplified routine," says Plaza. "But distributing to large nationwide chains, such as Target and ULTA, means dealing with many individual orders shipping to respective distribution centers around the country, many of which have differing norms.

"Also, meeting on-time ship dates becomes even more important to avoid incurring economic penalties," he adds.

As DRL's brand expanded both online and in stores, Port Jersey Logistics provided latitude in terms of service capabilities and industry experience. Eventually, Target started selling Atopalm on its website in 2012. After the initial e-commerce debut, a store test followed–with the promise of a nationwide roll out if everything went well.

To ensure the pilot was successful, DRL opted to sacrifice profit margin for product exposure by offering shoppers "Buy One, Get One Free" dual pack discounts.

This presented a considerable logistics problem. Atopalm is manufactured and packaged in South Korea. There wasn't enough time to secure a newly packaged, large-order shipment from Asia and meet Target's deadline. So Port Jersey Logistics was called upon to find a solution.

Because of the recent increase in shipments, and expansion of services, the 3PL had sufficient inventory to meet the big box retailer's needs. Port Jersey Logistics removed existing packaging, re-wrapped the product into two-packs, and placed promotional stickers on them. Each two-pack was banded with two others of its kind, creating six-packs as mandated by Target for easier handling.

The pilot was successful, and Target began rolling out Atopalm in select nationwide stores starting in 2013.

Working with Target has required a number of changes in how DRL specs inventory for retail use. For example, each store's packaging and labeling requirements are different–not only for individual items, but for boxes as well. Port Jersey Logistics must apply bar codes to cases, and place both the Target number (which the retailer provides) and the DRL item number on the case labels prior to shipping.

### Filling the Bill

Target also demands that its suppliers have Electronic Data Interchange (EDI) capabilities. Port Jersey Logistics incorporated this requirement into its suite of services on DRL's behalf as well.

"I think the biggest issue–and one that we have, thus far, navigated successfully–is that we have a 100-percent on-time delivery rate with Target. This is critical," says Plaza.

On the transportation side, DRL has taken advantage of Port Jersey Logistics' volume pricing with UPS to further reduce costs. "It has been beneficial to deal with one group when bringing in shipments from port and/or shipping overseas – both of which are required from time to time," adds Plaza.

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"The biggest benefit G&T gains by moving to dedicated is that we don't pass on any liability," Olshefski notes. "As an FMS customer, if G&T had an accident, it was on the hook."

With the dedicated operation up and running, G&T is looking to grow with Ryder. The company maintains a considerable presence in Michigan, where it manufactures product, and Olshefski believes Ryder will find opportunities to expand.

"Ryder's goal is to prove to G&T that we can keep the promises we made, and continue to grow with its business," he adds.

### A Changing Paradigm

Shippers today look at 3PL partners differently than they have in the past. Coakley believes the economic downturn played a big part in this change of perception.

"During the recession, companies suddenly began laying off large groups of people within their supply chain organizations," he says. "They also took a hard look at assets – buildings, equipment, and IT systems. The recession forced companies to start searching outside typical boundaries, to find more fluid and more flexible processes."

In effect, industry has come to recognize the value of trading fixed investments in infrastructure and resources for long-term 3PL partnerships that provide latitude to grow or contract as demand dictates. When uncertainties abound, outsourcing is a sure thing.

3PLs have a vested interest in long-term agreements. They want customers to steer away from the procurement mentality, where transportation and logistics is bought, sold, and negotiated like any commodity. During the recession, as trade volume and capacity softened, many shippers saw this as an opportunity to cost-compare transportation options. That usually comes at a price—namely service.

The manner in which 3PLs such as Kenco, Menlo, and Ryder are working collaboratively with customers speaks volumes about how outsourcing is evolving. As service providers take on a more consultative role, the idea of partnership will only grow. 3PLs are also more willing to be part of a solution—not the entire solution.

The 3PL space will continue to be collaborative and competitive. Opportunities will grow for transformative 4PL-type partnerships – or, in some cases, outsourcers assuming that mantle.

Logistics providers will look to grow their value proposition by cross-selling services and capabilities across functions, as well as through the value chain. And shippers will seek partners that can take tactical problems and lead them toward strategic fixes.

Transportation and logistics outsourcing has become a model for doing business—not just another way to move business. And 3PLs will continue to take shippers in new strategic directions.

"The path toward true north is never a straight line," says Mooney. "It always changes, because business changes." ■


by Merrill Douglas

**Got the nearshoring bug? Here are the challenges, benefits, and secrets to success for manufacturing south of the border.**

In recent years, Mexico has emerged as a hotspot for firms looking to contain production costs. When U.S. companies make product in Mexico, not only do they find skilled workers at lower wages, but they still get convenient access to their North American markets and suppliers.

Automakers, aerospace firms, and other big players such as General Dynamics, Newell-Rubbermaid, La-Z-Boy, and Whirlpool operate factories in Mexico – as do many smaller non-Mexican companies. By 2017, increased manufacturing exports from Mexico could add $20 billion to $60 billion per year to that country's economic output, according to a 2013 report published by global management consulting firm Boston Consulting Group (BCG).

Foreign firms have been manufacturing in Mexico since at least the 1960s, when the government there created the maquiladora program. Back then, U.S.

companies established plants in Mexican border towns to take advantage of the labor rates that prevail in that country.

In recent decades, the search for even lower costs launched a stampede to the Far East. But Asia may be losing its allure, largely because labor there is not as cheap as it used to be. "The trend in China, in particular, has been for wage rates to increase by 15 to 20 percent each year," says Michael Zinser, a Chicago-based partner at BCG. "In Mexico, wages have been much more stable."

Adjust the equation to account for each country's rate of labor productivity, and Mexico is often the more affordable choice. By 2015, productivity-adjusted wages in Mexico could be about 30 percent lower than in China, according to the BCG report *Made in America, Again: Mexico's Emergence as a Global Manufacturing Power.*

"Factories in Mexico are more productive today because companies there have been introducing automation and lean manufacturing processes," Zinser says.

### LABOR POOL APPEAL

The local workforce can take credit as well. "Mexico offers high-quality, skilled labor," says Gene Sevilla, vice president of international supply chain solutions at Miami-based Ryder System. "Over the past

MADE IN MEXICO

## JUAREZ FACTORY ADDS VALUE

Portage Electric Products Inc. (PEPI) opened a factory in Mexico in 2003 to handle the more labor-intensive aspects of its manufacturing processes. PEPI makes thermal control devices, which manufacturers use to regulate temperatures in appliances, small motors, and other products. One way the company distinguishes itself from competitors is by configuring its products to meet each customer's unique needs.

"That requires a lot of hand labor," says Brandon Wehl, chief executive officer of the firm, based in North Canton, Ohio. And hand labor can be expensive.

"As labor rates increased in the United States, and we started seeing more competition from Asia, we were in a pinch, because we couldn't raise our prices," he says.

The solution was to open a factory in Juarez to work in tandem with the more highly automated U.S. operation. "We perform some of the front-end manufacturing in Ohio," Wehl says. "Then we transfer the product to Mexico for the value-added operations."

**PEPI opened its Juarez factory to perform labor-intensive customization tasks for its thermal control devices.**

In recent years, PEPI has started making some of its more labor-intensive products entirely in the Juarez plant, he adds.

Product made in Juarez ships to customers in the Americas and Europe. PEPI also manufactures in Asia, to serve markets in that region.

PEPI uses a shelter service, The Tecma Group of El Paso, Texas, to handle most of the functions in Juarez that don't directly concern production.

"They take care of the border crossing and logistics between El Paso and Juarez," Wehl says. The service also provides buses to take employees to and from work, and amenities such as food service and a weekly visit from a nurse.

"We appreciate not having to deal with small details that are hard to manage from 1,800 miles away," Wehl adds.

To further bridge the distance, PEPI sometimes uses Skype and web cameras to help experts in Canton analyze equipment problems in Juarez. "We can see what they're seeing, and they don't have to explain it," Wehl says.

Adding a Mexican plant to PEPI's supply chain has reduced the flexibility, admits Wehl. Shipping materials to Juarez for assembly can extend lead times by one week, making it harder to accommodate rush orders. But customers have adjusted.

Although Mexico's lower pay scale drew PEPI to Juarez, Wehl advises U.S. companies not to skimp on salaries for the most crucial Mexican employees. "In key parts of your production, you still need to find the best people you can afford to hire," he says.

Some of PEPI's managers in Juarez earn salaries at the upper end of the scale for that region. Investing in a quality workforce has paid off.

"We experience very few problems with productivity, quality, or product reliability," Wehl says.

**Government-sponsored worker training programs have helped Mexico build a strong, capable labor pool, which many U.S. companies draw on to staff production facilities in the country.**

several years, the government has instituted programs to qualify and educate the country's workforce — and those efforts have been very successful."

Foreign companies used to employ Mexican workers mainly to assemble finished products from components, but Mexico has upped its game, says Dan McGrew, vice president of operations at Velvac, a Wisconsin-based manufacturer of mirror- and camera-based vision systems for RVs and other heavy vehicles.

"Products are now being designed in Mexico," says McGrew, who runs Velvac's main factory, located in Reynosa. "Many industries are creating high-quality goods at competitive prices."

## QUICK TRIP

Even in cases where China has an edge on labor costs, companies find Mexico attractive for other reasons. One is the shorter supply chain that Mexico makes possible. It costs more to ship goods to the United States from China, and the trip across the ocean creates added expenses.

"The farther production is from the U.S. end market, the higher inventory carrying costs are," says Steve Colantuoni, vice president of marketing at the Tecma Group of Companies, an El Paso, Texas-based firm offering business services to companies that manufacture in Mexico. "Most companies manufacturing at a distance carry a 30-day inventory at each stage of the supply chain."

A long supply chain also increases business risk. "Sometimes companies change a product's design, which may make their stored inventory obsolete," says Colantuoni. And companies with long supply chains have a hard time serving customers who need just-in-time deliveries.

While those strategic calculations still hold for many companies, others head to Mexico for more tactical reasons. The latter group includes suppliers whose customers have already located south of the border. The auto industry offers many examples.

"Original equipment manufacturers (OEMs) often want their suppliers to maintain a presence in Mexico," says Ralph Biedermann, the Chicago-based managing director of Mexico Consulting Associates. Some large OEMs, such as General Motors and Freightliner, have built industrial parks near their Mexican assembly plants to house their suppliers.

"Building supply chains near the point of manufacturing is what's driving most of the newer companies — not just U.S. companies, but also Canadian, Japanese, and German — into Mexico," says Eduardo Saavedra, vice president, business development at The Offshore Group, a Tucson, Ariz.-based provider of Mexico outsourcing solutions.

## READY TO TRADE

Free trade agreements (FTAs) also offer an attraction. Mexico has more of those than any other country, according to the BCG report.

In addition to the North American Free Trade Agreement (NAFTA) with the United States and Canada, Mexico has FTAs with many countries in Central and South America, plus Israel, Japan, and the European Union.

Along with advantages, starting an operation in Mexico can also pose some serious challenges for U.S. manufacturers. The first lies in the simple fact that Mexico is another country. Even if a plant in Monterrey is just a quick hop from the home office, it still sits on foreign soil.

"Newcomers need to be prepared for an environment where the currency, rules, regulations, and culture are different," says Sevilla.

## IT'S CLOSE, BUT IT'S NOT HOME

As in any other country, manufacturers in Mexico must comply with local labor laws, tax requirements, environmental regulations, and a host of other demands that differ from those at home. "It's not rocket science, but it's a learning curve, which can cost money," says Saavedra.

That curve might be forbiddingly steep for smaller firms that head south to accommodate a major customer.

"Some smaller suppliers don't have a lot of experience outside their region or outside the United States," says Biedermann. "They've never had to think internationally."

Experienced or not, some manufacturers decide that the best way to operate in Mexico is to outsource unfamiliar aspects of the job. That's why companies such as The Offshore Group and Tecma offer what's known as shelter services.

A shelter service provider shields foreign manufacturers from the details of running a business in Mexico. "Most shelter companies have a Mexican entity, and their clients — the manufacturers — come into Mexico under the shelter's business license," says Colantuoni. "In the eyes of the Mexican legal system, they are a department of that Mexican entity."

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# GUAYMAS

## BREAKING NEW GROUND

Ducommun Aerostructures manufactures aircraft components in six locations in the United States, and in Guaymas, Mexico. The Guaymas plant serves as an "extended work center" for five of the company's divisions, says Paul Cappelli, director of program management at Ducommun, and the person responsible for the Mexican operation.

The company opened the Guaymas facility in 2007 to help control production costs. Thanks to Mexico's lower labor rates, Ducommun Aerostructures has been able to keep winning contracts for products such as spoilers for the Boeing 737. "The Mexico facility gives us a strong competitive advantage," Cappelli says.

To further control its overhead, Ducommun outsources many of its non-core functions in Guaymas to The Offshore Group, a provider of shelter and logistics services based in Tucson, Ariz. "The Offshore Group recruits personnel," Cappelli says. "It also manages imports and exports, so Ducommun does not need to employ personnel to handle customs brokerage, or logistics."

When Ducommun moved into Guaymas, it was the only aerospace firm in that city, which made it hard to find employees with the right experience. "We had to hire workers, then train for the skill sets required to manufacture aerospace parts," Cappelli says. "Some workers had never seen the types of tools we use."

Fortunately, that investment in training paid off well for Ducommun, and for other aerospace companies that have since moved into the state of Sonora. "Employee turnover is a huge issue in the United States," Cappelli says. "In Mexico, we experience less than two-percent turnover. Once we train a worker, that person stays with us."

One challenge that still lingers is the relative scarcity of suppliers for services such as chemical processing and heat treating. That posed a big problem for Ducommun early on, especially because it can only use suppliers that are certified to meet the specifications of Boeing and other customers.

Ducommun helped one chemical processor in Mexico so it could get the necessary certifications. "We continue to do that as we add customers," Cappelli notes.

Any company that is considering putting a factory in Mexico, and plans to outsource some of its special processing, should find out whether the services it needs are available. The necessary infrastructure has not yet been established. "They are making strides, but progress has taken a long time," Cappelli says.

**Aircraft component manufacturer Ducommun Aerostructures enlisted a shelter services provider to establish and manage its production plant in Guaymas, Mexico.**

A company that uses a shelter doesn't need to incorporate in Mexico, file Mexican taxes, learn the details of Mexican labor law, or wrestle with other responsibilities that apply to a Mexican business. The shelter handles the paperwork, recruits employees with the right skills, issues paychecks, and manages regulatory compliance.

Often, it also serves as a landlord and arranges for utilities. Some shelter companies provide sourcing, logistics, transportation, customs clearance, and other services.

Choosing a location is another important challenge. One factor to consider is whether you can find the products and services you need in the city where you build your operation. "If heat treating is critical to your production process, you need to ensure a heat treater is nearby," says Colantuoni.

When companies locate in Mexico, most of them don't start out sourcing a certain portion of their raw materials from that country. "They establish themselves with the current supply chain, then try to improve it," says Saavedra. "By developing sources in Mexico—and, in particular, finding a strong concentration

of key suppliers—manufacturers can make operations more efficient."

Proximity to both suppliers and customers is important, but manufacturers should remember that trading partners come and go over time, or move to different locations. "A shift of customers and suppliers might cause costs to rise – particularly freight costs," says Biedermann. "And freight is more expensive in Mexico than in the United States."

Outside large industrial centers, finding workers with specific skills may also present a challenge. "Certain labor skills may not be available in small towns that have never had manufacturing operations before," Biedermann says. "Companies will have to import labor from other cities. That can be expensive."

Companies contemplating a move to Mexico must consider the whole picture, including the cost of crossing the border and keeping workers and facilities secure.

## WHAT IS TAXABLE, WHAT IS NOT

Although NAFTA and other trade agreements offer the chance to ship product in and out of Mexico duty-free, NAFTA has created challenges for companies that source materials outside North America. Under the old maquiladora program, a company could bring goods into Mexico from anywhere, assemble them, then re-export the finished products without paying taxes. NAFTA changed all that.

"A lot of the product companies brought in from offshore because it was not available in North America became taxable," says McGrew.

Before joining Velvac, McGrew ran manufacturing and operations in Mexico for two other companies, plus a distribution center for one of them. He serves on the board of Index, an organization that represents the interests of companies that produce in Mexico for export.

Companies moving goods across the U.S.-Mexico border don't necessarily run into special challenges. "In general, good logistics companies operate in both countries," says McGrew. And for operations in border towns, the Mexican portion of the trip may be only a few miles. "It isn't difficult to move merchandise back and forth," he says.

But shippers that need to move smaller volumes – especially to and from remote locations in Mexico – may have trouble finding appropriate capacity.

"In Mexico, even now, most less-than-truckload (LTL) traffic moves in small vehicles," says Ryder's Sevilla. "If shippers want to send a pallet from Mexico City to Cancun today for delivery within 48 hours, they might have to send it in a pickup truck."

Although the situation is improving, Mexican LTL carriers don't provide the quality or service frequency shippers expect in the United States.

3PLs such as Ryder offer services to fill those gaps, including a network of trucks, locations, and crossdocks providing nationwide reach in Mexico.

The Offshore Group uses freight consolidation to accommodate shippers that want to ship smaller loads several times per week. "We run one or two daily trucks that shippers share," says Saavedra.

## ON THE SAFE SIDE

Given some of the news that has come out of Mexico in recent years, it's no surprise companies looking to establish operations there worry about security. Concerns about drug-related violence, theft, and attempts to slip contraband into trucks moving north across the border have kept corporate executives awake at night.

Some who do business in Mexico say crime has become less of a problem in recent years. "We're experiencing far fewer disruptions," says McGrew.

But companies still must take some costly steps to secure people, property, and freight. More companies are locating within secured industrial parks, or installing fences surrounding their properties. "Around-the-clock guards – employed either by the company or by a guard service – are a must," says Biedermann. "Companies that opt for a guard service need to check them out thoroughly. More companies are also using in-plant cameras."

## AN EYE ON THE BIG PICTURE

While they're watching out for security risks, companies planning to locate in Mexico also need to watch out for unanticipated costs. "Whether it's the drayage back and forth across the border, the additional cost of importing and exporting, brokerage costs, or compliance, businesses need to do their homework," says McGrew.

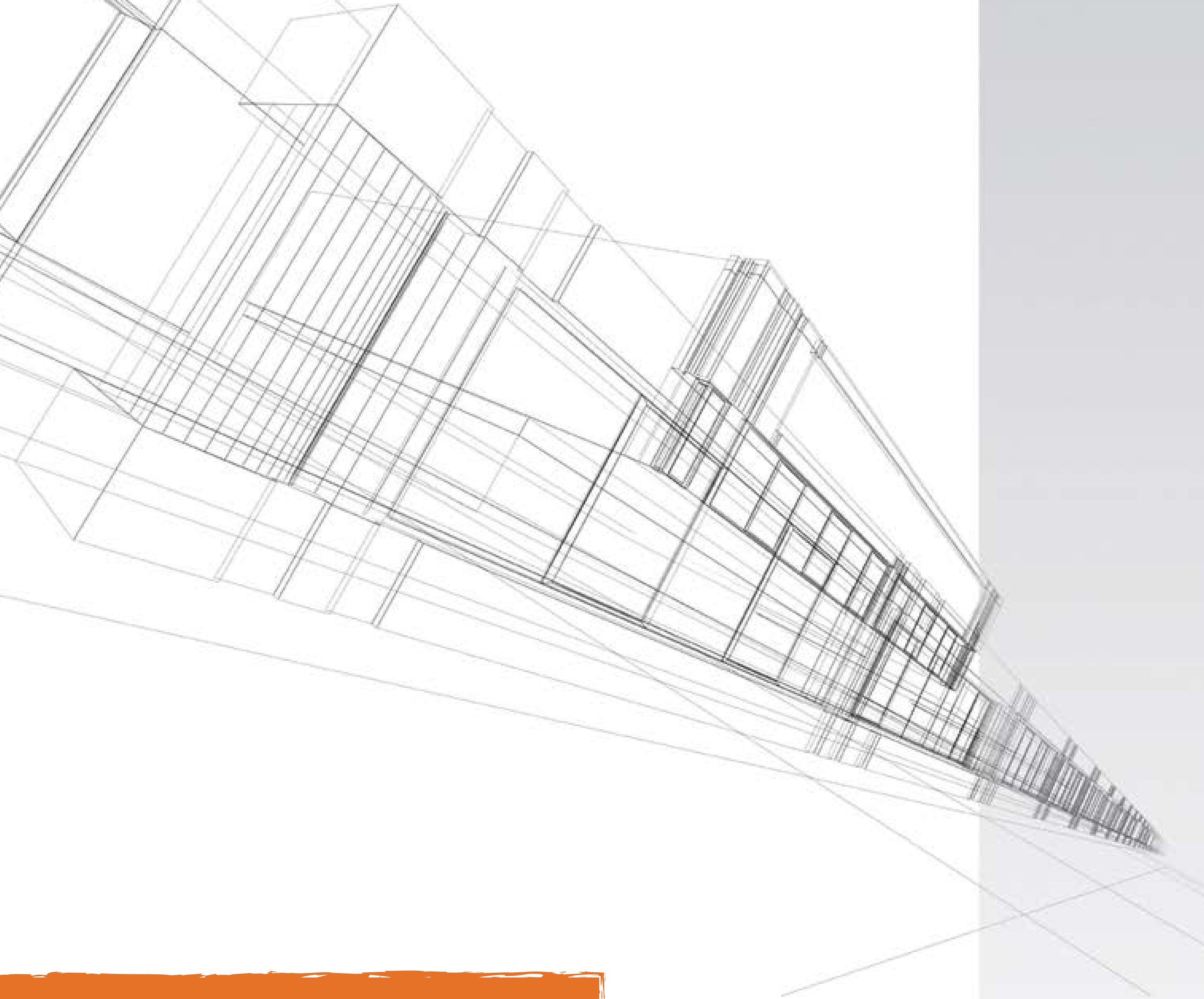
Zinser agrees that companies contemplating a move to Mexico must consider the whole picture, including the cost of crossing the border and keeping workers and facilities secure. "Otherwise, a company could follow the appeal of lower labor costs and a short supply chain, but fail to see other factors, which could be important," he says.

Sometimes, a company can control its costs through judicious logistics management. "It could be as simple as asking why you're shipping three skids daily instead of a truckload weekly," says Saavedra. "Shipping truckloads 52 times per year saves a lot of money on border crossings and freight."

For companies that follow a large OEM to Mexico, it's wise not to stick too close to that customer, says Biedermann. If the relationship dissolves someday, a location right next door to the former trading partner could leave the supplier stranded.

"Those companies might want to locate on the other side of town," Biedermann says. That will make it easier to attract business from other customers in the area. "Or think about U.S. markets you can serve from that factory as well," he adds.

As more U.S. companies consider the benefits of nearshoring, many are bound to cast their eyes on Mexico. When they do, they need to take care to examine not just the prevalent wage scale, but the cost of all the steps involved in making their products and getting them to market. ■



# CARGO SECURITY

## PROTECTING THE SUPPLY CHAIN

**Whether on a truck, in a warehouse, or at a port, your shipments are vulnerable to theft. Learn how to reduce that risk and keep your valuable cargo safe.**

by Suzanne Heyn

Each year, about $30 billion worth of cargo is lost, according to the Federal Bureau of Investigation, and incidences of cargo theft reached record highs in 2012.

Monetary losses from theft—along with the dangers posed by criminals sneaking illicit materials such as bombs or drugs into containers in transit—make strengthening supply chain vulnerabilities critical. To secure cargo, supply chain professionals employ a multi-layered approach that incorporates the latest technology and fine-tuned basic practices, such as extensive staff training. Meanwhile, federal laws and initiatives work to boost cargo security at the nation's borders and ports.

Most important to securing the supply chain is continually evaluating areas for improvement. Sometimes, companies aren't aware of vulnerabilities until thieves strike.

Take the third-party logistics (3PL) provider that approached Fair Lawn, N.J.-based investigative firm Danbee Investigations complaining of theft, decreased warehouse productivity, and a mysterious increase in work-related accidents.

Using three undercover operatives, Danbee's comprehensive investigation revealed a rampant cocaine problem within the operation, complete with two employees moonlighting as drug dealers and supplying other employees with drugs. A human resources employee acted as an accomplice, alerting workers before drug tests to ensure they passed.

The drug ring created numerous problems for the 3PL. "Not only do on-site drug problems pose a safety issue, but they also create a theft risk, because workers who are buying drugs may be tempted to steal the goods they are handling to fund their habit," says Barry Brandman, president of Danbee Investigations.

## A GROWING PROBLEM

The 946 cargo thefts reported in 2012 was just one more than in 2011, according to logistics security firm FreightWatch International, but the number set a new record nonetheless. Experts partly blame the economy for the increase. Tight times push some unscrupulous insiders into criminal activity to pad their paychecks.

Experts also blame antiquated cargo theft laws that carry weak penalties. Minimal jail sentences prompted some organized crime syndicates to branch into cargo theft.

"The cargo theft problem has intensified in the past decade, because cargo value has increased, and thieves have grown more sophisticated," says Richard Murphy, president of Murphy Warehouse Company, a Minneapolis-based 3PL."We're not talking about chump change; it's a big deal."

Historically, cargo thieves targeted big-ticket items, such as electronics. Supply chain professionals responded by implementing robust measures to secure shipments. The measures have been so successful that thieves shifted their focus to low-value cargo, creating new problems.

Murphy Warehouse Company took several steps to address these problems. To track inventory, Murphy employees count products daily, allowing staff to quickly discover any shortages or overages. The company uses surveillance cameras, and works with armed, uniformed off-duty police officers who make unscheduled rounds.

**Inside Murphy Warehouse Company's facilities, surveillance cameras and security staff protect goods from thieves. Daily inventory counts quickly identify any stock shortages or overages.**

GPS systems accompany products on trailers. The tracking technology incorporates geofencing, which allows users to define geographical boundaries. "If a truck drives beyond a certain route radius, an alarm will sound," says Murphy.

Once the alarm sounds, the dispatcher or security personnel try to reach the driver to determine why the truck left its course. "Being unable to contact the driver may indicate a problem, such as a hijacking," Murphy says.

If drivers know a road detour will force them outside the allowed area, they can call or text an alert to the dispatcher. Trucks also come equipped with technology that allows Murphy's team to remotely shut the engine down if necessary. "If a thief steals that truck, we can just stop it from moving," Murphy says.

Some trucks are equipped with multiple GPS units, but thieves quickly caught on to that method. Nevertheless, the time it takes to dismantle the second system sometimes saves the load from theft.

Thieves can also outwit GPS devices without dismantling them. One of Danbee Investigations' covert operations unveiled a scheme where company insiders would load extra product on a truck, then alert the co-conspirator driver of the excess. The driver would arrange to meet accomplices at various points along the delivery route to hand off merchandise.

"The GPS never revealed anything out

of the ordinary," Brandman says. His team uncovered the guise by hiding video cameras inside gym bags and briefcases in the warehouse. The crooks were caught on tape exchanging merchandise for large bundles of cash, making the case an easy one to close.

Despite thieves' abilities to surmount even the most sophisticated security measures, the protections have worked. Increased security, combined with serial numbers that help identify stolen goods, have led thieves to seek new targets.

## LOW-VALUE PROTECTION

In 2007, electronics accounted for 32 percent of all cargo thefts, according to FreightWatch International. By 2012, food and drink had replaced electronics as the most-targeted cargo type, accounting for 19 percent of all thefts that year. Meanwhile, electronics thefts dropped to 12 percent.

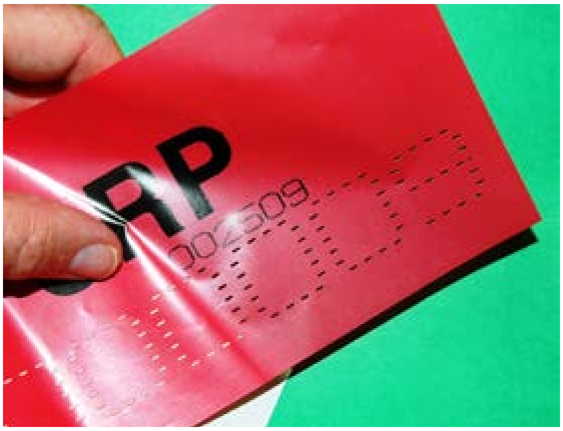
Although most companies shipping low-value cargo don't use special technology or other methods to protect it, that may soon change. Logistics providers sometimes offer high-value security protection for low-value goods as a customer service, says Chris McLoughlin, cargo risk manager for Eden Prairie, Minn.-based 3PL C.H. Robinson.

"Shippers are becoming more aware of the need for cargo security," McLoughlin says. "Shippers that understand the bigger picture risk are generally more apt and willing to expand the budget when necessary. If they want an armored car to move their freight, a 3PL can arrange that."

Many companies, however, would rather take a hit than spend more for anti-theft measures. "For some companies, there's a level of acceptable loss," says Erik Hoffer, president of security products company CGM Security Solutions, Bowling Green, Ohio. The company provides inexpensive security measures, such as tape that, when removed from a carton, reveals the word "opened." Even with inexpensive solutions available, however, some companies still hesitate to invest in security.

For all types of cargo, increased communication among shippers, logistics providers, carriers, and law enforcement is helping to boost security. Databases and alerts from companies such as FreightWatch International and CargoNet—a Jersey City, N.J.-based theft prevention firm—help supply chain professionals stay aware, and represent a key element in the effort to keep the supply chain secure.

C.H. Robinson recently partnered with CargoNet to stay up-to-date on theft trends, including types of goods targeted, methods used, and locations impacted. Getting the big picture view of cargo thefts outside C.H. Robinson allows McLoughlin to better protect the company's shipments. For example, if a rash of thefts of a particular type of merchandise occurs, McLoughlin alerts his network to enact heightened security measures for shipments of those types of goods.




**Low-cost methods for securing cargo include special security tape that leaves a message if the shipment is tampered with.**

CargoNet's database of stolen goods also helps catch perpetrators. "Law enforcement might arrest someone for a theft unrelated to your stolen cargo, then discover your shipments among other stolen goods in the thief's possession," McLoughlin says. "Through the CargoNet system, they're able to identify the goods and tie them to other thefts."

FreightWatch offers a similar service. The week before Thanksgiving, the company emailed a Thanksgiving Holiday Awareness alert. "During this time, electronics and clothing/shoes move up on thieves' wishlists—in a three-way tie with the ever-popular category of food/drinks for the most targeted product type," the memo read. "Covert GPS tracking with an active monitoring program is vital to mitigate threat, and an invaluable asset to the recovery process in the event of a theft."

This communication is key. Historically, companies have been leery of discussing security issues, not wanting to make losses public, or give criminals too much information. Openness, however, can help the industry come together and stay ahead of thieves.

Generating buy-in from law enforcement is another critical component of combatting cargo theft. Although federal agencies have begun taking the crime more seriously, considering it a gateway crime to more nefarious activities—including terrorism—many local jurisdictions consider cargo theft a business-to-business issue that doesn't impact the community.

C.H. Robinson contracts with a third-party theft investigation team that works with law enforcement. If stolen goods are reported, the investigators make sure a listing appears on the National Crime Information Center, a database available to law officials nationwide, and work with police to recover the merchandise.

## A CUSTOMIZED APPROACH

Combatting cargo theft requires a multifaceted approach customized to each situation, and incorporates strategies at all levels within an organization.

"A cookie-cutter approach doesn't work for security," says Dan Purtell, senior vice president, supply chain solutions for BSI Group, a business standards firm based in London.

Building good relationships with all business partners is key—and with inside jobs so common, the need for strong relationships extends to employees.

Limiting turnover and properly training employees helps shore up logistics providers' operations. C.H. Robinson implemented a high-value freight training certification that employees must undergo bi-annually.

Securing freight also requires air-tight processes. The frequency of deceptive pickups—in which a thief poses as a legitimate driver and simply hauls a load away—spiked 763 percent from 2009 to 2012, up to 61 incidents, according to FreightWatch International. This trend has prompted companies to enhance driver identification procedures.

**Properly securing trailer doors, and verifying driver credentials, can help prevent cargo theft and protect vehicles from being used to transport contraband such as bombs and drugs.**

## TIGHTENING THE SECURITY NET

Many companies have adopted detailed processes that, when layered, tighten security and help ensure only legitimate drivers pick up merchandise. Steps include logging the driver's name and equipment numbers, snapping photographs of the driver and license plate, and photocopying the driver's license.

Training employees to follow all the steps and notice details—such as verifying that the logo on the truck door is for the company the driver claims to be employed by—can mean the difference between a mega-dollar heist and a failed theft attempt.

Technology also helps thwart deceitful pickups. Brandman once worked with a client to install a device that would take digital snapshots of a driver's face, CDL and manifest, and store them in a permanent record. In case of a fraudulent pickup, the facility could send the driver's images to law enforcement. Posting notifications of the photo-taking policy served as another deterrent.

Before installing the equipment, the company had three bogus drivers make off with trucks over two years. Five years after installing the equipment, the company has yet to report another incident.

Even companies that enact stringent security measures sometimes discover vulnerabilities after it is too late. In 2010, a Cuban gang stole $90 million worth of medication from a Connecticut warehouse operated by pharmaceutical company Eli Lilly. The thieves entered the warehouse through the roof, disabled the alarm system, and loaded the goods onto tractor-trailers, according to the FBI.

"Eli Lilly didn't skimp," Brandman says. "The company appropriated what it felt was an adequate budget for security, but subsequently learned that having security that's good enough isn't good enough—not when it comes to professional thieves."

Pharmaceuticals, although accounting for just three percent of all stolen goods, receive attention because of the danger stolen, and subsequently reintroduced, goods pose to consumers.

The Eli Lilly heist generated robust discussion in the pharmaceutical industry about risk mitigation, notes Chuck Forsaith, chairman of the Pharmaceutical Cargo Security Coalition (PCSC), an organization comprised of pharmaceutical industry professionals, law enforcement and government entities, cargo insurers, carriers, and risk management advocates dedicated to preventing theft of pharmaceutical products in transit.

After the theft, Eli Lilly carefully reviewed the incident and uncovered vulnerabilities that it shared within the industry.

"That shared insight strengthened the pharmaceutical industry's ability to protect itself against these types of illicit intrusions," Forsaith says.

The pharmaceutical industry employs many of the same protective methods as other industries, including focusing on layers of security. To keep cargo safe, companies may use teams of drivers, GPS tracking technology, and remote vehicle disabling in transit. In the warehouse, measures might include increased lighting, and strict visitor identification.

## SHARING IS CARING

The pharma industry has also focused on sharing intelligence through annual conferences, daily alerts, and topical updates for PCSC members and stakeholders, such as law enforcement and logistics providers.

These measures significantly reduced pharmaceutical cargo theft. In 2009, the industry counted 47 thefts with a total value of $197 million. By 2012, the number of thefts dropped to 30, with a total value of $5 million. In 2014, the industry plans to expand its focus and reduce theft internationally.

Cargo security measures aim to protect merchandise from theft, but they also secure containers against incoming materials, such as bombs or drugs. These concerns multiply when shipping goods into the United States through borders, ports, and airports.

To tighten security around inbound pharmaceuticals, the FDA recently began accepting applications for the Secure Supply Chain Pilot Program (SSCPP).

SSCPP seeks to prevent tainted, misbranded, or unapproved drugs from entering the country. The FDA opened applications in 2013 for the two-year pilot security initiative, which began in February 2014, and provides qualified firms with expedited processing of cargo into the United States.

## SHORING UP SECURITY WITH C-TPAT

The U.S. Department of Homeland Security (DHS), along with Customs and Border Protection (CBP), have also enacted initiatives, such as the Customs-Trade Partnership Against Terrorism (C-TPAT), designed to provide tightened, multi-layered security.

Critics question the effectiveness of these initiatives, but many security professionals report safety has greatly improved over the past decade. Protections begin even before U.S.-bound cargo departs from foreign ports.

C-TPAT, a broad, voluntary security program that began in November 2001, aims to shore up what CBP says are the two most vulnerable points in the international supply chain: loading, and transit from loading to export. "C-TPAT is the largest supply chain security program in the world," Purtell says. "The beauty of the initiative is it secures cargo at the source."

To apply to the program, a company must submit an application and security profile to CBP, which then searches for the company in law enforcement and trade databases.

The 10,000-plus participating companies must follow special procedures, such as requiring supervisors to inspect containers before loading, and oversee the actual loading before immediately sealing the container.

In response, participating companies receive expedited shipping into the United States, and are four to six times less likely to have their cargo examined, according to CBP.

## VULNERABILITIES PERSIST

Although the program requires many checks, some supply chain security experts say it falls short. "It is naïve to assume a locked container is completely secure," says Jim Giermanski, chairman of Powers International, a Belmont, N.C., chain-of-custody technology provider. "Criminals can always find ways to access containers—and C-TPAT assumes the integrity of those overseeing loading."

Although no perfect system exists, Giermanski says the best defense is hiring and training trustworthy workers, and investing in technology tools. Container security devices, for example, help to alert those overseeing cargo if an unauthorized person gains access.

One year after launching C-TPAT, CBP started the Container Security Initiative (CSI). The program allows CBP to staff foreign seaports, in collaboration with the host country, to examine high-risk cargo to prevent weapons of mass destruction from entering the United States.

CSI operates in 58 ports including Cartagena, Colombia; Port Qasim, Pakistan; two ports in Israel, and others throughout Europe and Asia. About 80 percent of maritime cargo entering the United States originates in or passes through a CSI port, according to DHS. Once the ship arrives at an American port, CBP again scans high-risk cargo, says Kip Payne, manager of government relations for the American Association of Port Authorities.

Although CBP frequently cites the high percentage of cargo tracked, a 2013 Government Accountability Office report finds the screening program is absent at about half the ports CBP considers high risk. The report acknowledges limitations imposed by conditions in host countries.

Once on American soil, cargo at the nation's 22 busiest ports is supposed to undergo screening for radiation, under the Security and Accountability for Every Port Act of 2006. Although all cargo undergoes screening, a 2013 Office of Inspector General report finds the program has significant flaws.

For example, the scanners use technology on the verge of being outdated, and the Defense Nuclear Detection Office (DNDO), which manages the scanners with CBP, hasn't worked to develop replacement technology. The report also finds that DNDO and CBP fail to coordinate effectively, which has resulted in some scanners left unused and others not used enough.

"The port scanning programs are not being run as well as they should be," Payne says. "We want to ensure they are maintained properly."

AAPA is working with Congress and CBP to encourage adequate funding for additional scanners, and to upgrade the computer system that clears imported cargo.

"Securing the ports is key," Payne says. In 2012, 1.4 billion tons of cargo passed through U.S. ports.

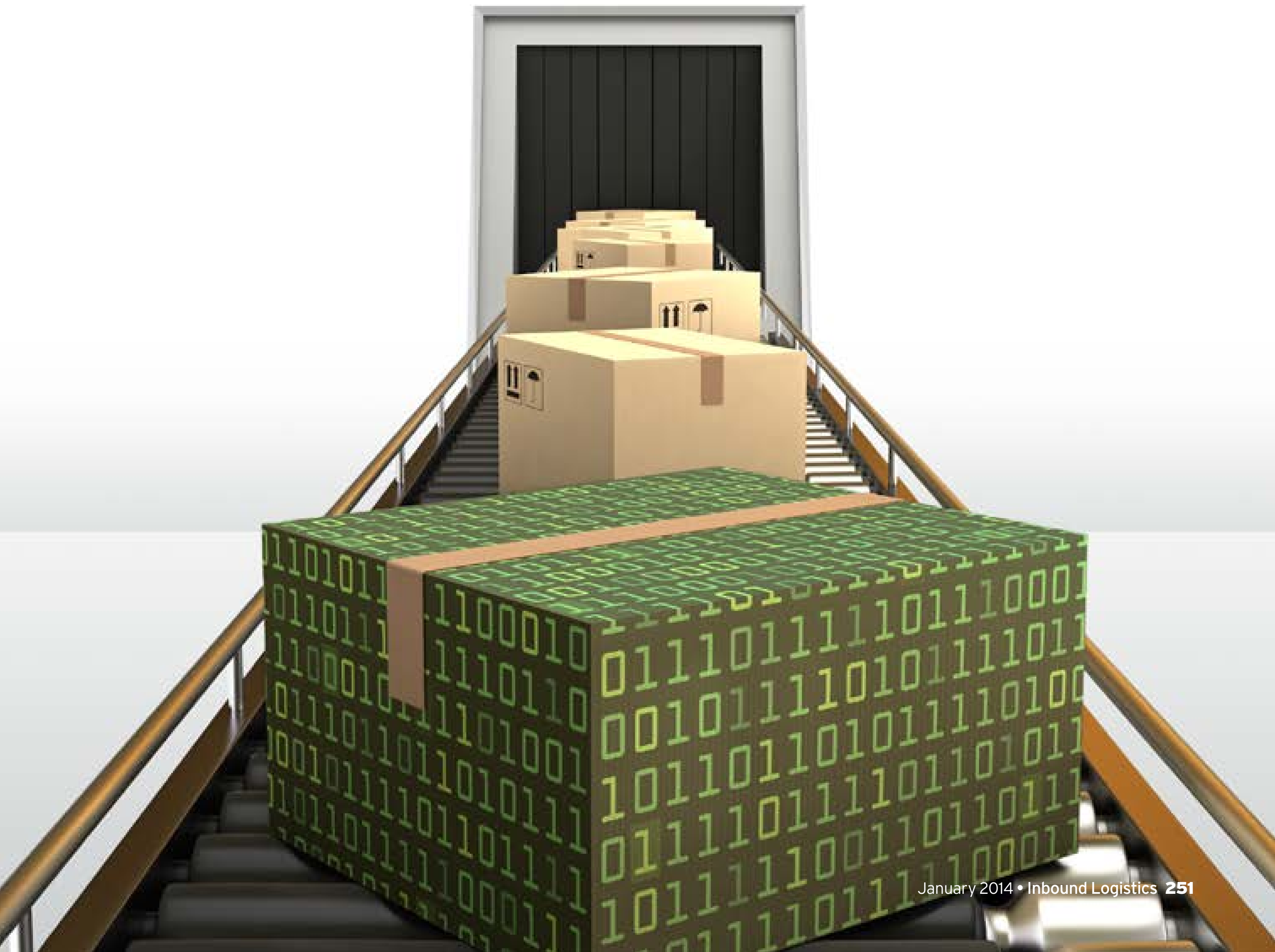
Despite the critics, Purtell says these measures greatly increase security around the nation's points of entry. "Ports are much more secure than they were 10 years ago," he says.

The quest to continue beefing up security must continue, because criminals are always evolving their methods. "Thieves will try to find weaknesses in the supply chain, and will constantly use new methods to thwart the security procedures in place," Purtell says. "We have to continue to raise the bar." ■

# MATERIALS HANDLING MEETS BIG DATA

By studying warehouse equipment and labor performance data, you can help your operations achieve top marks for productivity, safety, and equipment utilization.

**by Amy Roach Partridge**



The supply chain sector is buzzing about big data. At any logistics association conference, the topic of what to do with the large and complex sets of data most companies are now collecting is bound to come up. And now, big data is gaining ground in warehouses and distribution centers, too—places that were once a black hole of information.

"Historically, when product moved from a trailer into a warehouse, it was as if the shipment entered a big blank box you couldn't see into," says Jim Gaskell, director of global Crown Insite products for Crown Equipment, a materials handling equipment manufacturer with U.S. headquarters in New Bremen, Ohio. "Today, companies need to continue to monitor those products—and the equipment and labor handling them—throughout the warehouse."

Many businesses are accomplishing that feat through big data.

Warehouses and distribution centers are often as high-tech as the products they store and send out to consumers. With the increase of automated materials handling systems and equipment—as well as technology solutions that manage labor, inventory, and equipment in the distribution center—warehouses now generate a wealth of information. The abundance of data these new "smart" warehouses generate is helping companies improve facility, labor, and equipment productivity; increase safety; boost throughput and inventory accuracy; and prolong the life of key equipment such as forklifts, conveyors, sorters, totes, and racks.

## Keeping Up With the Times

This evolution of warehouse data has occurred rapidly over the past few years, and mirrors the drastic advancement that has transformed the consumer landscape.

"It shouldn't surprise us that forklifts, for instance, can now deliver actionable usage and battery life data right from their on-board technology systems," Gaskell notes, citing the connectivity and information resources that are now the norm in both smartphones and consumer vehicles. "It is natural that these technology and data enhancements should occur in distribution, too."

The trend started with over-the-road trucks, which have been equipped with telematics solutions and tracking sensors since about 2000. These solutions provide data that helps companies effectively manage fleets and drivers—a concept now being applied to materials handling fleets in warehouses around the globe.

Take, for example, Owens & Minor, a national distributor of name-brand medical and surgical supplies. In its Richmond, Va., distribution center, the company uses Crown Equipment's wireless forklift fleet and operator management system *InfoLink* to manage more than 30 electric forklifts. The solution provides actionable data collected from forklift sensors that are able to track an array of factors, including battery usage, impact history, truck utilization, OSHA compliance, and service needs.

The solution helps forklifts perform like "smart" trucks, providing valuable data accessible through interactive dashboards. The setup helps fleet operators focus on exceptions and opportunities instead of digging through mounds of data to identify key trends.

Since deploying *InfoLink* in 2010, Owens & Minor has achieved greater visibility into its forklift fleet operation, allowing it to discover—and correct—various fleet utilization inefficiencies. Just one month after installing the system, the company determined that two of its stockpicker

**Lift trucks equipped with on-board technology can gather information on equipment usage, battery life, and driver performance. Companies can use this data to more effectively manage fleets and workers.**

forklifts were not being utilized, and could be removed from the fleet.

"Another surprising fact the data revealed was the narrow window of time during which we used the lift trucks each day," explains Ron Smarsh, general manager of the Richmond distribution center. "Four months into the installation, we were able to make some minor operational adjustments to eliminate two more trucks."

In addition to right-sizing its fleet, Owens & Minor's Richmond DC used the data *InfoLink* provided to track and improve workplace safety regulations compliance and impact monitoring. The company has expanded its use of *InfoLink* to its Baltimore, Detroit, and Louisville facilities, where it will use the data for similar purposes.

## Right Data, Right Decisions

Accessing the right information to make smart decisions in the warehouse is one main reason why the demand for big data has grown so much—and so rapidly—in the distribution sector.

"In the past, warehouse operators weren't too concerned about equipment maintenance data, how many scans were done on a line, or how many orders were changed at the last minute on a conveyor," says Greg Cronin, executive vice president of Intelligrated, a materials handling automation solutions provider based in Mason, Ohio. "But today, companies want every piece of data available. They also want the data stored for a long time so they can access and analyze it."

The type of data companies are seeking has also changed. A few years ago, most companies were focused on analyzing basic data such as the number of orders handled in a certain timeframe, and comparing the data across a network of distribution sites. This would simply help companies gauge how well each DC was faring, and whether locations were hitting their targets.

Now, companies want data that can provide real business intelligence—actionable information they can use to improve warehouse efficiency and productivity.

"We pass an array of materials handling data to companies because they want to establish trends and patterns," says Cronin. Businesses want detailed specifics such as the number of diversions on a conveyor, and conveyor motor performance data.

Drilling down to such minute details allows companies to use historical data to find key trends and patterns that can help them better understand their businesses, and make important changes. The historical data, in turn, becomes predictive, allowing companies to plan for likely events before they even happen.

"Using big data correctly helps companies allow for more flexible planning and predictive analysis in the warehouse," explains Mark Dickinson, executive sales manager, automated systems division at SSI Schaefer, a global storage and picking solutions manufacturer with U.S. headquarters in Charlotte, N.C.

Carefully analyzing labor performance metrics, for instance, can help companies predict labor needs during specific periods.

"If a company runs 50,000 lines in X number of hours with X number of employees, the warehouse manager can break that down on a time scale to predict the amount of time and labor the operation will need to handle whatever volume comes in next," Dickinson explains. "The manager can call in backups or ask employees to work overtime if they are expecting higher volumes."

This has been especially important for e-commerce companies whose DCs handle multi-line orders. Complex orders with multiple items pose a challenge in how to best set up the warehouse and position inventory for maximum effectiveness, as well as what type of materials handling equipment should be used.

"In a large DC for a major e-commerce or multi-channel retailer, it's not unusual for one order to contain two items that are slotted on opposite ends of the warehouse," Cronin explains. "Retailers must find the most cost-effective way to bring the two items together into one box to be shipped to the customer.

"A lot of the big data being accumulated now is for those purposes," he adds. "It helps companies determine how to optimally position goods that are often sold together so they can be picked in the same box, and don't have to be brought together across thousands of square feet of warehouse space."


**Analyzing labor performance data allows companies to predict their workforce needs during specific periods so they can ensure they aren't over- or under-staffed.**

For industries that typically operate in a "pull" environment, collecting big data on warehouse and materials handling operations is crucial to helping make smart decisions on the fly.

The wine and spirits industry, for instance, is always at the mercy of unpredictable demand from its restaurant and bar customers, notes Chris Castaldi, manager of business development for W&H Systems, a Carlstadt, N.J.-based materials handling systems integrator.

"Companies in the wine and beverage industry are looking for a lot of materials

handling data to maximize efficiency in their warehouses, because they have little control over what they ship daily," Castaldi explains.

But, he says, companies have moved past the stage of just wanting data for data's sake—they now demand that their partners help them use that data to make smart decisions. "Warehouse operators are asking their data suppliers what their facilities need to do to meet demand, how many workers they need, and how much usage their equipment will get," Castaldi says.

### Sensors, Scanners, and Systems

Sensors and detectors play a key role in gathering the data companies seek. Placed in various locations on forklifts, conveyors, sorters, and other mechanical equipment in distribution centers, sensors and detectors capture a wide range of operational data. They are crucial for turning materials handling equipment into smart systems that don't simply perform tasks, but also help collect and disseminate crucial information about warehouse operations and productivity.

"We use sensors and data collection devices—combined with location tracking technology and sophisticated software—to provide not only various types of safety, equipment monitoring, and fleet management solutions, but also labor productivity, automated inventory tracking, and, ultimately, centralized control of manned and unmanned vehicles," explains Phil Van Wormer, executive vice president of TotalTrax, a Newport, Del.-based provider of tracking technologies for manufacturing and warehouse operations.

Equipping forklifts with data-collecting sensors is often the easiest place to start, Van Wormer notes. Impact sensors—to detect when a forklift bumps into something—and load sensors, which help to measure distance traveled with and without a load, are examples of "simpler applications that are delivering valuable insights to warehouse operators," he explains.

Usually, the forklift fleet is connected via a wireless network, and the data collected by sensors is stored either on a local or centralized server, or hosted remotely by a third party. Reporting packages from vendors such as TotalTrax allow companies to access a customized dashboard so they can view the specific forklift-generated data they are interested in, in whatever format they want.

Sensors are also crucial when it comes to gathering data from order-picking systems. Many automated warehouse systems provide data on details such as whether a tote is in transit or is stationary in front of an operator; the time it takes for an operator to perform a pick and place an item into the tote; and how long an operator is waiting for the tote to advance and the next pick to take place.

> "Gathering data from our materials handling systems tells us exactly what each piece of equipment, workstation, and employee can handle."
>
> –**Troy Ruscheinsky,** Swanson Health Products

This type of data is typically time-stamped, as well. "By capturing when picks are performed, users can query that data and run reports on historical metrics," explains Dickinson. "This is helpful for determining operator and equipment productivity levels, and comparing them to forecasts and projections."

### Putting the Data to Work

One popular way to use data collected by lift trucks and conveyor and sortation systems is to improve warehouse safety and efficiency.

For example, at Golden Guernsey Dairy, Wisconsin's top milk producer, forklift data helped reign in reckless forklift driving. Although the company always emphasized safety in its 150,000-square-foot facility, accident rates among its 100 operators were higher than the company could tolerate, and the damage to its forklift fleet was generating high maintenance costs.

Golden Guernsey Dairy needed a way to track the accidents and change operator behavior. The company turned to a TotalTrax product called ImpactManager ID, a forklift impact detector that mounts on the exterior of the forklift and sounds an alarm when an impact occurs.

The device reports each incident, and the offending operator's identity, through an internal network. This data allows the company to track when and how accidents occur, and which drivers need to be disciplined or retrained.

In addition, knowing that the equipment is monitored causes operators to drive at safer speeds, resulting in significantly fewer incidents and a safer environment for workers. In fact, four months after equipping all 11 of its forklifts with the TotalTrax monitoring system, the number of monthly impacts fell from 1,036 to just four.

### Helping Reduce Abuse

This approach has also helped The Scotts Company—a division of Marysville, Ohio-based lawn and garden products company Scotts Miracle-Gro—to reduce truck abuse, accidents, and maintenance costs. In its Marysville manufacturing and distribution facility, The Scotts Company selected ImpactManager RF, a wireless TotalTrax system that can be used on all of Scotts' mobile equipment, including sweepers, lift trucks, front-end loaders, and several track mobiles that move rail cars.

Data from the ImpactManager RF units helped The Scotts Company decrease damage involving its materials handling equipment by 75 percent. And, by monitoring activity for all drivers and vehicles, the company's management has access to data and reports not only for vehicle impacts, but also for additional training needs, utilization opportunities, and OSHA compliance.

Changing operator behavior is key to making these kinds of improvements. "Telematics solutions help organizations identify inefficiencies and improve them," Gaskell says. "In the warehouse, it often comes down to changing driver behavior."

For instance, a Warehouse Management System (WMS) may help a company track how long it should take to move product from the dock to the rack via forklift, but it doesn't explain why that time parameter is not always met.

"It may take some operators 10 minutes

and others 20 minutes, but sometimes it only takes five minutes. Without the data from the forklift, it is impossible to identify the right time," Gaskell says. "The data collected by the lift truck will show that the driver who took 20 minutes drove five miles to get to the rack, while the other driver drove half the distance. Or maybe one operator was on the forklift the whole time, and the other was not."

By analyzing this type of data, companies can identify inefficiencies, then retrain employees to correct those errors.

## Spotlight on Productivity

Improved productivity and asset management is another important benefit companies reap from properly utilizing big data from materials handling equipment. Crucial warehouse equipment such as sorters, conveyors, and rack systems are large—and expensive—assets that cannot be changed on the fly to flex with demand. That's why warehouse operators constantly seek to maximize productivity and optimize the fixed physical assets in their facilities.

"Being able to properly predict and change processes and labor to maximize asset utilization is crucial in DCs," says Castaldi. "Big data is a huge help in accomplishing those goals."

**Materials handling equipment such as sorters and conveyors cannot be easily reconfigured to manage demand. Big data helps warehouse managers maximize these assets' productivity.**

Companies need to zero in on finding the appropriate data that can help them make crucial decisions and changes that maximize materials handling system efficiency. Warehouse control systems (WCS) make this task easier.

A WCS acts as a traffic cop of sorts, ensuring that operations run smoothly within the DC's four walls. It also tracks data such as which equipment is available to work on; how many people are working and where; and the performance rate of equipment and employees, including details such as the number of diverts per hour, and whether that figure meets or exceeds the company's specified standards.

"Companies that collect this type of data can make decisions on the fly that boost productivity and asset utilization," Castaldi notes. "For instance, if too many employees are working on one task, productivity rates decrease. Using that data, a company can quickly determine that employees can be put to better use doing something else."

The idea is not to wait and analyze this type of data after one shift, or one day, or one week, but to have instant access and visibility throughout the process.

That type of data-fueled productivity visibility has been a boon for Swanson Health Products, a Fargo, N.D.-based online and catalog retailer of vitamins and natural health products. The company embraced automation in its Fargo distribution center in 2006, installing an automated solution from SSI Schaefer that includes carousels, an A-frame picking system, a conveyor system, and miniload system used to store large numbers of small items.

Thanks to the data each of these systems puts out, Swanson is able to optimize the use of each piece of equipment, as well as warehouse labor.

"We look closely at the lines-per-hour data the equipment provides. Based on that information, we know the capacity of each system," explains Troy Ruscheinsky, project manager, Swanson Health. "The capacity information, in turn, tells us how much labor we need in the warehouse, and allows us to budget for workers throughout each season."

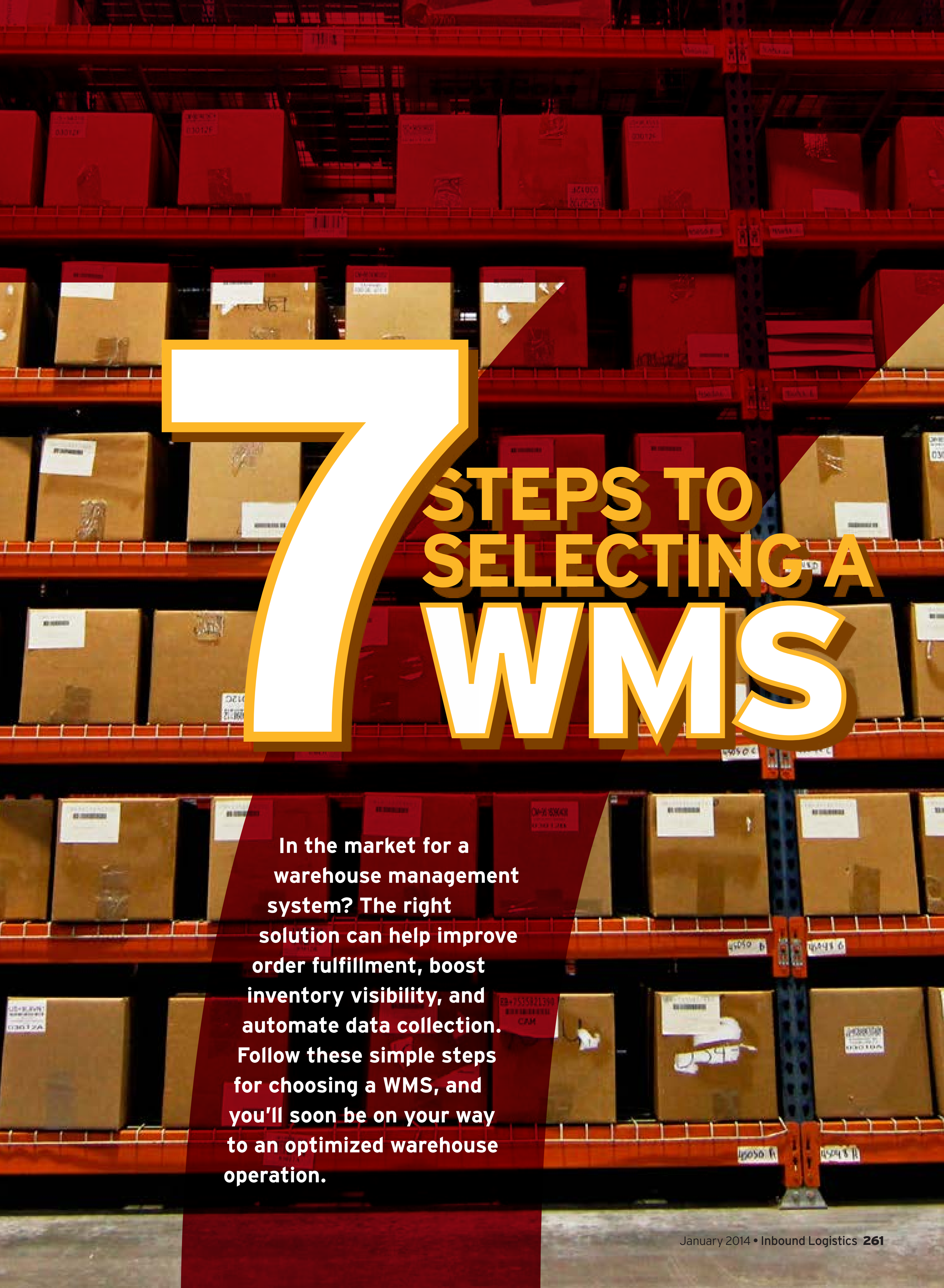
Budgeting for labor is crucial for the company, especially during its busy season, which occurs during the first quarter of each year, when many consumers are focused on sticking to their New Year's resolutions to stay healthy. Because Swanson does extensive marketing during this time, it must be able to deliver on the increased demand by fulfilling orders quickly and accurately.

When managing the changing throughput, the company relies on the "mins and maxes" data from its materials handling systems to ensure the system is loaded properly.

"Loading SKUs into each system is a juggling act," Ruscheinsky says. "Each piece of equipment performs a different task, and we have fast-moving, medium-moving, and slow-moving items. If we overload, productivity suffers.

"Gathering data from our systems tells us exactly what each piece of equipment, workstation, and employee can handle, which helps us determine how to load the system appropriately for the throughput we need to manage," Ruscheinsky says.

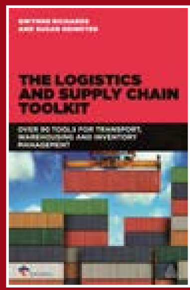
Whether it is used for labor planning, system performance benchmarking, optimizing equipment usage and maintenance, maximizing productivity, boosting safety, or creating the best inventory flow in the warehouse, big data in materials handling is helping supply chain professionals make smarter operational decisions. ■



# 7 STEPS TO SELECTING A WMS

**In the market for a warehouse management system? The right solution can help improve order fulfillment, boost inventory visibility, and automate data collection. Follow these simple steps for choosing a WMS, and you'll soon be on your way to an optimized warehouse operation.**

Excerpted with permission from *The Logistics and Supply Chain Toolkit* by Gwynne Richards and Susan Ginsted (KoganPage, 2013).




Warehouse management systems (WMS) can process data quickly and coordinate movements within the warehouse. They can also produce reports and handle large volumes of transactions, such as those inherent in e-commerce operations.

The potential benefits of having a WMS in place include:

- Efficient and effective labor management
- Stock visibility and traceability
- Accurate inventory counts
- Fewer picking errors
- Fewer returns
- Accurate reporting
- Improved responsiveness
- Remote data visibility
- Automatic replenishment
- Improved customer service
- Minimized paperwork

Before embarking on a WMS implementation, you need to be certain that you will achieve significant business benefits. Such systems need capital investment, and involve running costs; however, the main "costs" are the drive, enthusiasm, and commitment needed from the entire warehousing team and senior management to ensure that the system is set up correctly, used properly, and optimized regularly.

A WMS is not a quick-fix solution, and it is more than an inventory control system and data collection tool. It is a system that helps automate your warehousing operations as much as possible.

IT projects should be justified on the same basis as any other business investment. A WMS is very much a tactical execution system, and is therefore easier to justify than many IT projects. It forms an important component of strategic business improvement, but is still tactical.

When you decide to invest in a WMS, these seven steps can help you choose the best solution for your warehouse operation.

## 1 Calculate return on investment (ROI)

The justification process is important because it helps you set a budget for your project, and focus on the functional must-haves rather than the nice-to-haves when selecting suppliers.

The key areas to consider are:

- The potential for a WMS to provide improved stock accuracy by reducing errors, providing real-time information, and enabling perpetual inventory counting.
- The potential for increased productivity and cost savings through improved labor, equipment, and space utilization.
- The need for improved traceability. A WMS can provide two-way traceability, almost as a by-product of being in place.
- Improved customer service through overall improved warehouse control, and greater pick and dispatch accuracy.

The more daily transactions—such as pallet moves and picks—and locations in the warehouse, the greater the potential for ROI, and the greater the justification. In addition, warehouses use expensive equipment where optimization can bring significant savings—sometimes to such an extent that less equipment needs to be purchased and fewer staff employed.

The methods WMS vendors use to set pricing fall into four main categories:

**1. Licenses.** The software licenses needed to run the system are typically charged by user—i.e., the PC or radio data terminal user. Some vendors now offer different models, including paying by transaction and/or paying monthly, rather than outright purchase of the system.

**2. Professional services** are the costs for project management, training, and go-live support.

**3. Development costs** cover requirements not included in the package, such as interfaces to third-party systems.

**4. Support costs** typically consist of an annual price based on licensing and development fees. The scope of service and cost varies significantly from supplier to supplier.

Ensure that the suppliers you approach quote prices for each of these categories. Ask them to indicate which prices are fixed and which are variable. Watch out for hidden fees such as travel costs and project management time.

Summarize all the costs in a spreadsheet, showing the initial outlay, and then costs for years one to five with accumulated totals. You might be surprised by the results.

Factor in hardware and infrastructure costs, which have to be considered in terms of project budget and ROI, but often can be managed separately, with interdependencies to the main project.

## 2 Decide on the process

Modern WMS are highly configurable—typically by the end user—and should be capable of working in virtually any type of warehousing environment.

In the past, producing long, detailed ITTs (Invitation to Tender) documents (or RFPs) was an important part of the WMS selection process. This reflected the limited functionality that was present in most systems at the time. The disadvantage of ITTs is that they cannot hope to take account of a company's future requirements, and are often over-prescriptive.

The other disadvantage is that many WMS providers will often not respond to ITTs. They consume a vast amount of time and resources, which the vendor might prefer to spend on other projects under their own control.

ITT templates can be downloaded from the Internet; however, many of these are, or were originally, prepared by WMS vendors and are slanted toward their products. Most WMS vendors, therefore, view such documents with suspicion.

## 3 Understand and analyze your existing systems

If your enterprise resource planning or business system already has a WMS module, analyze it first. The same due diligence applies to this selection as to any other system, but normally any small shortfalls in functionality are outweighed by reducing any risk of systems not interfacing with each other reliably and accurately.

Similarly, if your warehouse is highly automated—with cranes, conveyors, or sortation systems—you may wish to focus on the WMS provided by the equipment's automation systems company. This is typically known as a warehouse control system.

## 4 Evaluate each vendor's in-house development capability

In-house development is rarely viable, due to the package nature of the WMS market. A typical WMS vendor might amortize its continuous development costs over more than 100 clients. These same 100 clients serve as a valuable and thorough proving ground for the product in question.

In-house development is sometimes viable if the overall requirements are particularly specialized, or require specialized integration with existing in-house systems.

## 5 Request information

First, prepare a short request for information (RFI) document; no more than a few pages long. In this document, describe your business, future business direction, warehouse, and plans for the warehouse. Then describe in broad terms what you want to achieve with the WMS.

By this stage, you will have completed an operational specification for the warehouse to gain capital approval. The key elements from this specification form an ideal base for the RFI—for example, number of loading bays, reserve locations, pick face locations, and pick-and-pack station details. Of particular relevance are the types of users, such as administrative users, forklift drivers, pickers, and packers.

Provide a guide to the number of transactions per day (including receipts, putaways, picks, and dispatches), and indicate any significant peaks across the day, week, or month.

Do not try to describe how the system should work—in fact, it can be dangerous to be too specific at this point, as there may be faster, better, less expensive ways of doing things. Part of the selection process is to see how potential suppliers can guide you in this regard. If necessary, you can use the services of a consultant to help you.

Within the RFI, ask the vendor for budget costs and implementation time frames. Ask for supplier information, including:

- Company history
- Financial history and status
- Number of sites using its current WMS product
- Owner of the WMS's intellectual property and source code
- Client list
- Daily rates and support charges
- Support coverage
- Development plans
- Track record

Send this RFI to six to 10 suppliers initially. Focus on suppliers that have experience in your market—this is particularly the case if you are a third-party logistics provider. WMS vendors with no experience in this sector are unlikely to have the functionality and expertise to help you. Focus on suppliers that have a track record linking to any business or ERP system you are operating.

At this stage, you need to decide whether to purchase the software and hardware outright, or to rent the software and operate it on a third-party server platform.

A Software-as-a-Service (SaaS) WMS is an Internet-based application developed, hosted, and maintained by a third-party software provider on secure servers. The vendor rents out the system to a number of different clients. Those clients, in turn, choose the various modules within the software they require, and pay for them as they use them.

The advantages of a SaaS system are:

- Lower cost of entry
- Reduced start-up costs
- Instant upgrades
- User-driven innovation
- Ability to turn on and off as required—to run a temporary warehouse operation, for example.

An SaaS system will be attractive to start-up companies, and small and medium-sized enterprises, although it could also benefit larger companies looking for a temporary fix.

Potential disadvantages of a SaaS WMS include the possibility of poor Internet links between the companies, and potential worries over data security.

## 6 Create a short list

Produce a short list of three to five WMS suppliers. Price is not the main criterion at this stage, but can be used to rule out suppliers that will exceed your budget. Arrange for the suppliers to visit you for an informal meeting. This will help you get a feel for their company—how professional they are, how carefully they listen and respond to your needs, and how well they answer your questions.

Before you get into the detailed demonstration stage, do a little more checking on each supplier; this will help you reject unsuitable suppliers at an early stage. A good way of doing this is to telephone-interview at least six reference sites—preferably sites you choose from a longer list. These calls should all be made with the suppliers' knowledge, unless you have contacts with their clients already.

Ask the short-listed suppliers to provide you with a tailored demonstration. Get them to focus on what you believe is especially important for your operation—for instance, it might be pick face replenishment, or kitting and assembly. At some time during the selection process, ask them to give you an overview of their company, products, and people. Also ask for an overview of their product strategy.

Visit the main office to gain a better understanding of their culture, management, and teamwork. It is very important to get a good 'people' fit with any organization you select. It is always worth asking suppliers why they think they should be selected for your project.

The reference site visit is often the crux of supplier selection. Make sure you are given a choice of sites, not just one. Also make sure it is similar to yours in size and processes—or, preferably, slightly larger and more complex.

Now is also the time to specify and price out any identified gaps in functionality. Ask the supplier to provide an accurate project cost, clearly identifying any variable charges. This is where the contacts you have developed with the suppliers' reference sites will pay off, as you can talk to them about how well the supplier worked within the set budget and time frames.

## 7 Make your final choice

Choose the most appropriate WMS supplier for your warehouse. Utilize a decision matrix, taking into account the various criteria you have evaluated. ■

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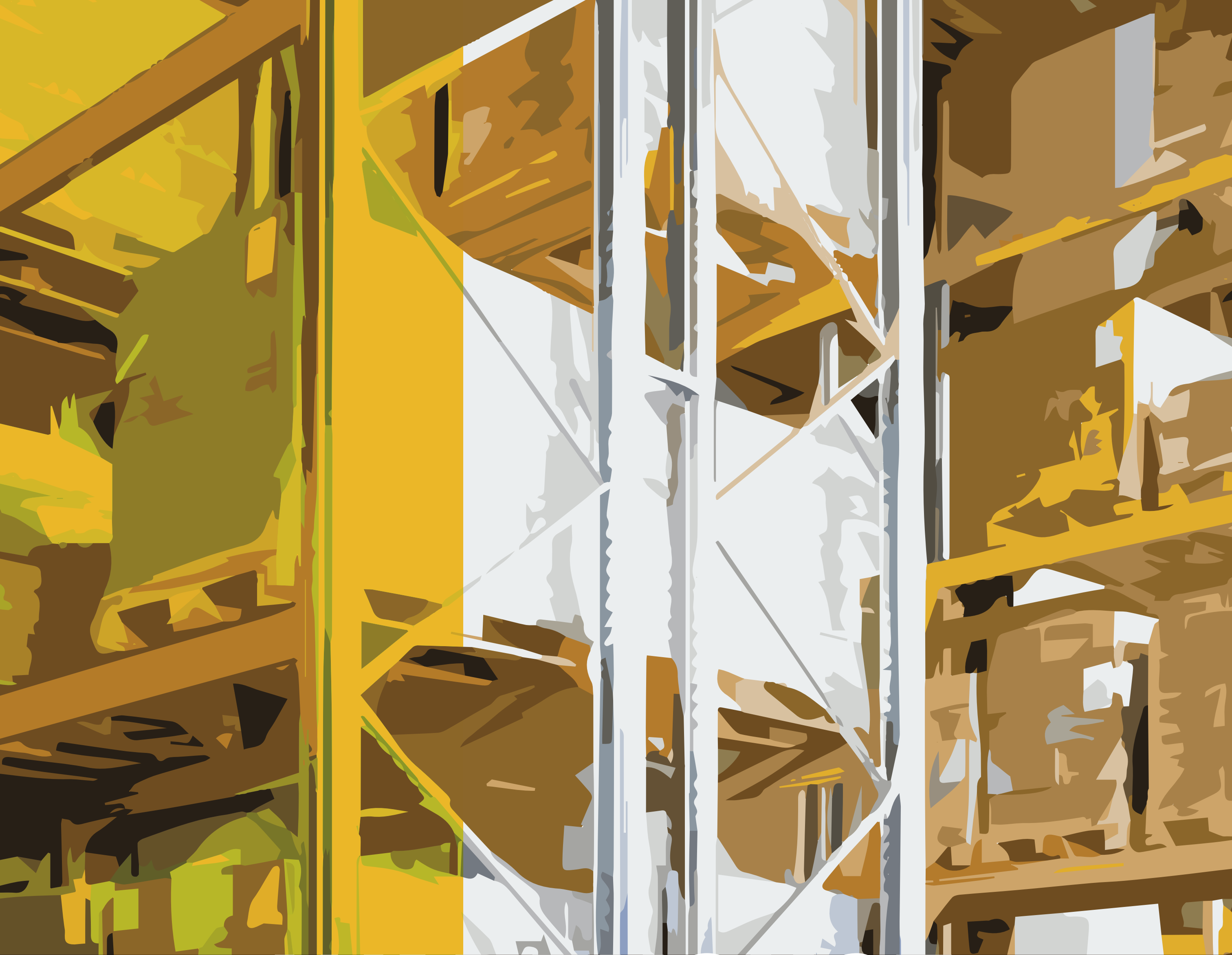


# WAREHOUSE WORKHORSES

By Jason McDowell

Looking for the latest products to increase efficiency in your warehouse? From forklifts to stackers, rugged tablets to safety equipment, these products are just what you need to give your operation a boost.

PRODUCT MOVERS | Lift'n'Buddy

## Model LNB-350 Hand Truck

**What do you get when you combine a two-wheel hand truck with a small powered stacker? Lift'n'Buddy's Model LNB-350 hand truck, which reduces the need for two separate pieces of equipment when transferring loads to and from shelves, workbenches, conveyors, delivery trucks, or other vehicles. Workers can load the hand truck – which handles weights up to 350 pounds – at a comfortable height to avoid injuries caused by lifting, stretching, and bending.**


PRODUCT MOVERS | Hyundai Forklifts

## BTR-9 Series Forklifts

Feel free to put Hyundai Forklifts' BTR-9 Series 24-volt electric counterbalance forklifts in a tight spot – they are designed for use on loading docks, narrow warehouse aisles, and other applications requiring a tight turn radius. The 10, 13, and 15 models have an extended mass height of 236 inches, and lift 2,200 pounds, 2,750 pounds, and 3,300 pounds, respectively. Safety features include an anti-rollback system, wide visibility on all sides, a secondary horn button on the hydraulic lift lever, and an overhead guard to protect drivers from falling objects.


PRODUCT MOVERS | Dematic

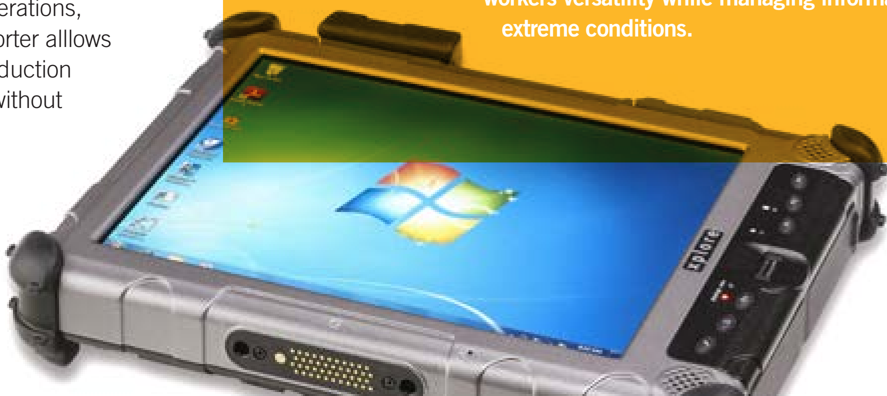
## FlexSort SC3 Crossbelt Sorter

A high-rate, high-accuracy sorting solution for distribution and warehousing operations, Dematic's FlexSort SC3 Crossbelt Sorter allows users to add or move chutes and induction stations, or change sorting speeds without installing additional hardware. The sortation system can be configured for use in batch picking, sorting, interlink, crossdock, and shipping applications.

TECHNOLOGY TOOLS | Xplore Technologies

## iX014C5 DM and DML Ultra-Rugged Tablets

**Dusty air, extreme temperature fluctuations, heavy vibrations, and drops will spell the end for most tablets, but the Windows-based iX014C5 DM and DML ultra-rugged tablets from Xplore Technologies are up to the challenge. Multiple mounting and docking options are available, as well as integrated scanning and data collection features that give workers versatility while managing information in extreme conditions.**

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PRODUCT MOVERS | Akro-Mils

## Akro-Tilt Truck

**Give workers super-human strength with tilt trucks that enable one person to lift, move, and maneuver jobs weighing up to 2,000 pounds. The Akro-Tilt Truck line comes in 14 models, seven of which have forklift channels, designed to help tip and empty loads that are too heavy to be tipped by hand. The one-piece molded body is rust-, dent-, and chip-proof, and corrosion resistant.**

TECHNOLOGY TOOLS | Newcastle Systems

## PC Series Mobile Powered Workstation

This mobile computer workstation provides enough onboard power to run a computer, printer, and multiple other devices simultaneously, and has shelf space to hold additional items. Because it is cordless, the workstation can be easily rolled and optimally positioned during inventory management and labeling tasks. The unit's rechargeable battery offers up to 12 hours of power for continued use.

STORAGE GEAR | Kardex Remstar

## Shuttle XP 1000

Kardex Remstar's Shuttle XP 1000 allows for ergonomic storage of heavy tools or large goods, as well as a number of small parts per tray. The tray can accommodate up to 2,205 pounds with a width of 4.1 feet, or 1,764 pounds with a width of 13 feet. In the warehouse, the storage system can be used as a tool store or to distribute spare parts, and can reduce necessary storage space by up to 80 percent.


PRODUCT MOVERS | Jungheinrich

## EFG-540k-S50 Series Forklifts

**Suitable for use in indoor and outdoor applications, the Jungheinrich EFG 540k-S50 series of electric pneumatic tire forklifts, available through Mitsubishi Caterpillar Forklift America, offers 8,000- to 11,000-pound capacity, and can last through two shifts on one battery charge in most applications. Deck it out with available options such as closed cabins, electronic power steering, keypad access, cold storage prep, and dual pneumatic tires.**

PROTECTIVE BARRIERS | Zoneworks

## TZD Fabric Wall

These flexible, insulated fabric wall systems reduce total energy costs by controlling temperature and humidity levels between the loading dock and the rest of the facility, as well as the loading dock and the outdoors. Each wall system is custom-designed using a combination of Zoneworks' curtain walls and modular wall panels, and can be affixed to existing structures or mounted on custom metal frameworks.

PRODUCT MOVERS | Invata

## Mini-Load and Unit-Load AS/RS

**For goods-to-person picking, dynamic replenishment, sequence buffering, order fulfillment, work-in-process storage, and finished goods storage, Invata offers two automated storage and retrieval systems (AS/RS), both controlled by its FastTrak warehouse management system. The mini-load AS/RS handles smaller loads weighing less than 500 pounds with a footprint less than 36 inches by 72 inches. The unit-load AS/RS tackles loads weighing more than 500 pounds with a footprint greater than 36-inches square.**

PRODUCT MOVERS | Southworth Products

## Southworth Stacker

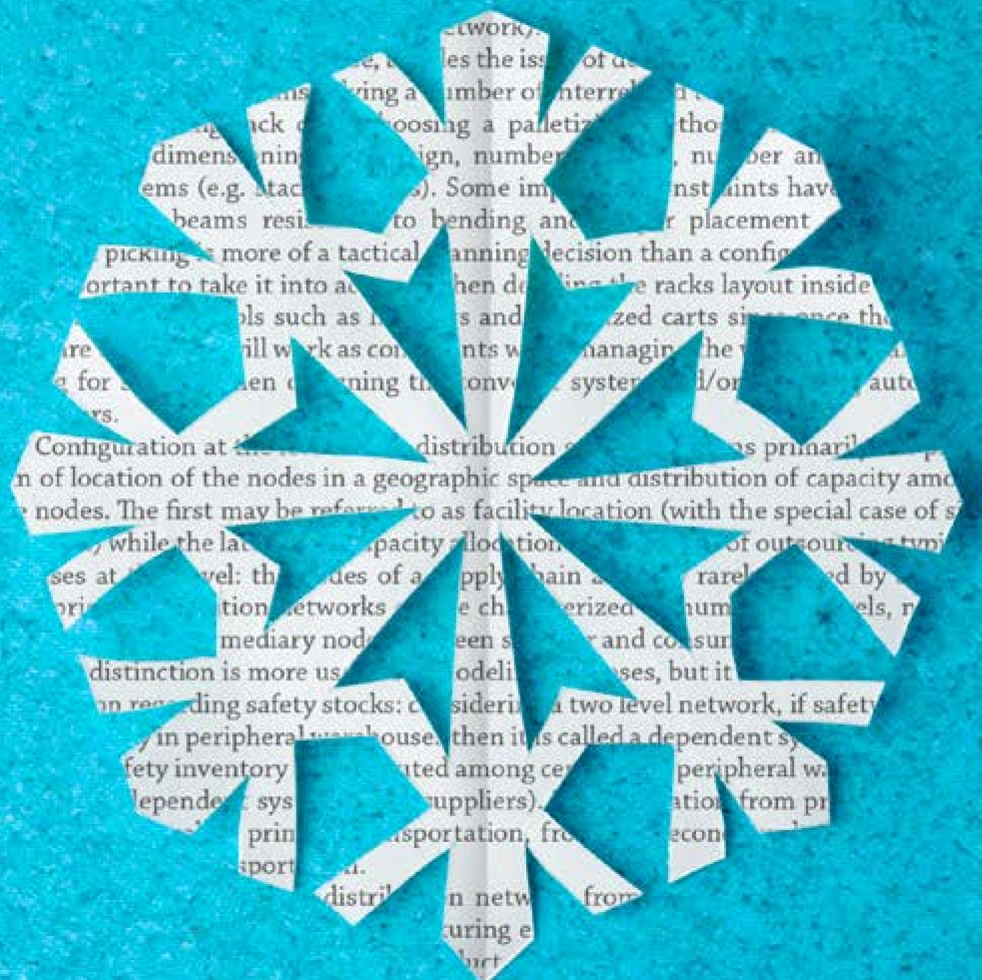
This lift stacker can lift, transport, and position up to 3,000 pounds at one time. The stacker has a lift height of 80 inches, and comes in two basic configurations: a fork over design for open-bottom pallets and skids, and a straddle style to accommodate all pallets and skids, including those with closed bottoms. Both configurations feature a high-visibility mast and dual-wheel casters with toe guards for safe positioning. A short overall length, and large turning angle make it possible to lift and stack in confined areas.



SAFETY GEAR | Hyflex

## Hyflex 11-101 and 11-105 Gloves

**Manufactured with a conductive yarn designed to allow interaction with touchscreen equipment, Hyflex 11-101 and 11-105 gloves allow wearers to operate touch screens without removing their gloves. They are optimal for temperature-controlled or other industrial environments where safety regulations require employees to move to a safe area before removing gloves to enter data into a mobile device.**



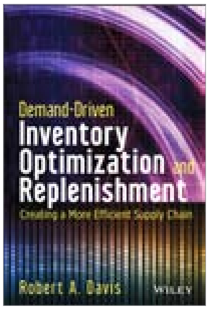
## INBOUND LOGISTICS'

# WINTER READING GUIDE 2014

If the polar vortex makes you want to hibernate, wake up your supply chain knowledge with the latest books by industry experts. Best practices and insights on everything from demand-driven processes to global logistics strategies will get you ready to spring into action. **By Catherine Overman**


## Demand-Driven Inventory Optimization and Replenishment: Creating a More Efficient Supply Chain

*By Robert A. Davis*

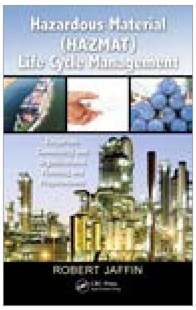



Davis presents the fundamentals of inventory optimization to help practitioners attain a demand-driven supply chain. He reveals why many of today's inventory systems don't make the most of their supply chain, and how faulty replenishment processes can lead to wasted time and effort. Drawing on his more than 20 years of supply chain experience at Nestlé, ConAgra, and SAS Institute, the author explains how to shift from supply-driven to demand-driven methodologies, create an efficient supply chain using just-in-time functionality, and optimize inventory policies and replenishment plans.

**KEY TAKEAWAYS:** Every company faces the challenge of matching its supply volume to customer demand. How well the company manages this feat has a major impact on its profitability. Through demand-driven inventory optimization and replenishment, the supply network can function as a synchronized entity to support the customer-facing service level requirement.

## Hazardous Material (HAZMAT) Life Cycle Management: Corporate, Community, and Organizational Planning and Preparedness

*By Robert Jaffin*

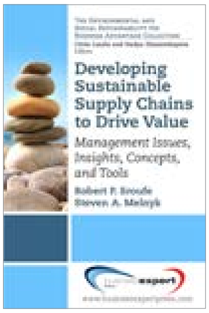



A useful guide for anyone charged with managing hazmat shipments, this book covers the various classes and definitions of hazardous materials; the regulations and standards governing them; risk, vulnerability, and emergency response planning; and hazmat-related issues facing private business, government, and non-profit/non-governmental organizations. Jaffin also addresses packaging, materials handling, and transportation considerations related to hazmat shipments.

**KEY TAKEAWAYS:** Hazardous materials are a unique but extremely diverse group of materials that requires special consideration by supply chain managers. Logisticians and packaging specialists must be involved throughout the entire production and transportation process to ensure hazardous materials shipments maintain the necessary moisture, temperature, and pressure levels.

## Developing Sustainable Supply Chains to Drive Value: Management Issues, Insights, Concepts, and Tools

*By Robert Sroufe and Steven Melnyk*

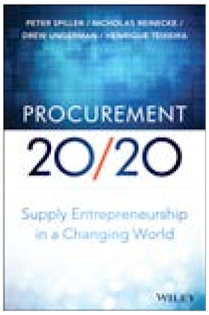



In the past, sustainability was seen as a trade-off—companies could be more sustainable, but profits would suffer. Today, however, businesses are discovering ways to be both sustainable and profitable. Logistics and supply chain professionals will benefit from this book's integrated, business-oriented treatment of sustainable supply chain management. Readers will learn how to reduce waste, enhance value, establish metrics to measure performance, and generate a strategic competitive advantage.

**KEY TAKEAWAYS:** Common benefits of sustainable supply chain management include cost reduction—both the product's whole-life costs, and the organization's overall operating costs; increased competitive advantage, profits, and innovation; decreased damage to the environment and human health; the potential to gain new customer market segments; and risk mitigation.

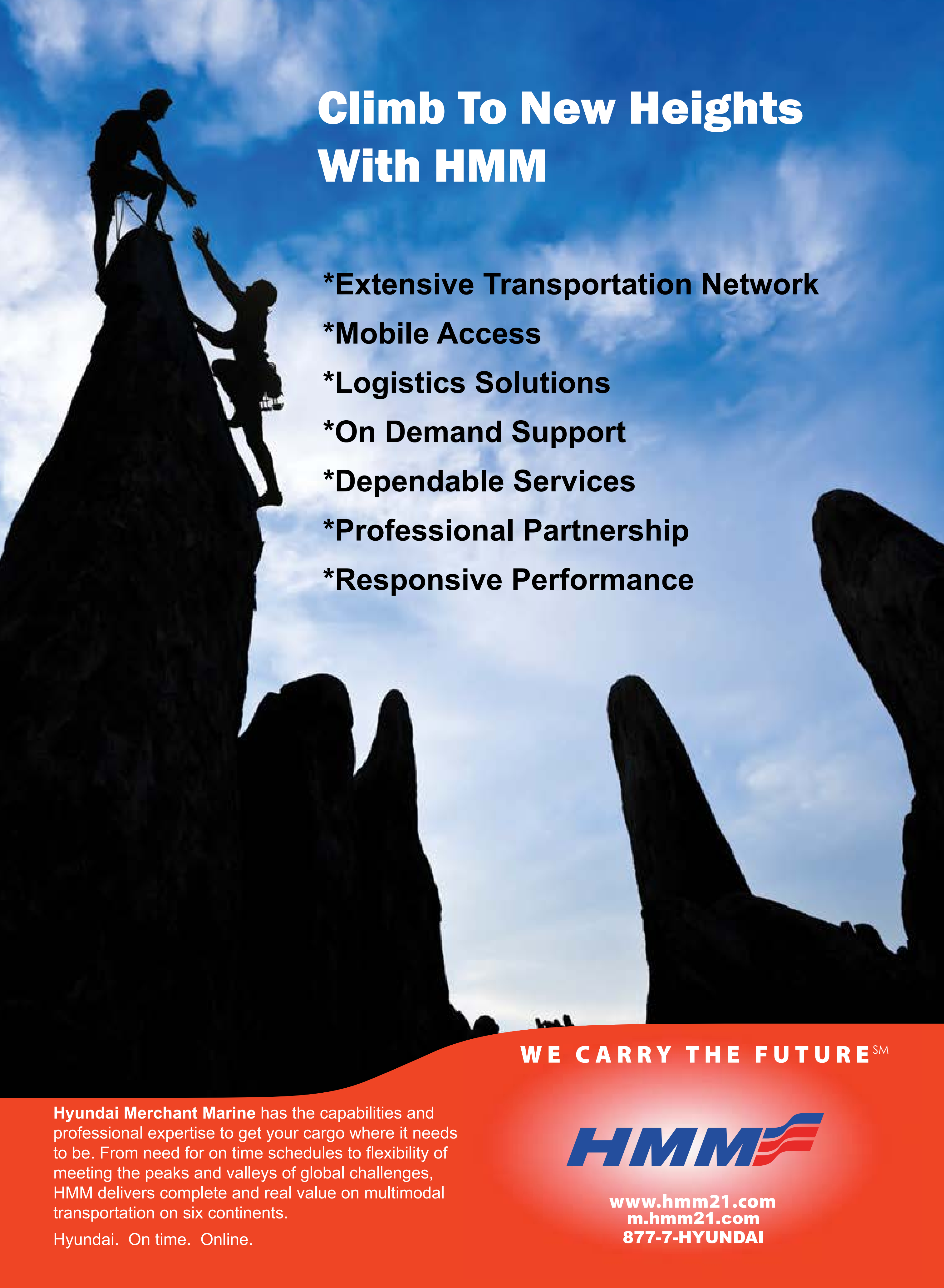
## Procurement 20/20: Supply Entrepreneurship in a Changing World

*By Peter Spiller et al*




Today's procurement managers struggle to develop cutting-edge sourcing strategies, exploit favorable market conditions, optimize supply chains to reduce costs across the value chain, and manage complex global supplier and contract manufacturer networks. This book offers procurement best practices pioneered by leading companies that focus on building a dynamic sourcing footprint, orchestrating the end-to-end value chain, translating sourcing risk into competitive advantage, and mastering data-driven decision-making.

**KEY TAKEAWAYS:** To achieve change in your procurement operations, define a medium-term future for each element of the transformation. Having a sense of where you want to be in three to five years gives you the immediacy, urgency, and tangibility you need to inspire stakeholders, set a rapid pace for change, break through resistance, and motivate your entire organization.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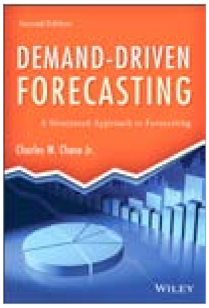
## Demand-Driven Forecasting: A Structured Approach to Forecasting, Second Edition

*By Charles W. Chase Jr.*




Essential reading for every professional responsible for forecasting and demand planning, *Demand-Driven Forecasting* includes the latest theoretical developments, while presenting current empirical findings and technology advancements. The second edition features new case studies and examples, along with coverage on demand-shifting, non-seasonal and seasonal models, transfer functions, and cross-correlation function plots.

**KEY TAKEAWAYS:** To become demand-driven, your business needs to identify the right market signals, build demand-sensing capabilities, define demand-shaping processes, and effectively translate demand signals to create a more effective response.

## LEAN Supply Chain Planning: The New Supply Chain Management Paradigm for Process Industries to Master Today's VUCA World

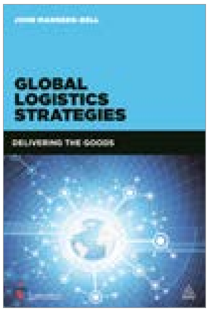
*By Josef Packowski*


Managing supply chains in a business environment ruled by volatility, uncertainty, complexity, and ambiguity (VUCA) requires more than minor operational modifications. To meet the challenge, manufacturers must adopt an entirely new way of coordinating and synchronizing their global networks, writes author Packowski, an industry consultant with more than 25 years of experience guiding operations management for companies such as Bayer, Merck, and Novartis. The Lean supply chain management planning concepts outlined in this book help logistics professionals relieve the pain points along their supply chain—from the strategic dimension to the daily operational level—amid VUCA challenges.

**KEY TAKEAWAYS:** The real issue in supply chain management is not improving sales forecast accuracy and reducing the amount of uncertainty—the path to success lies in eliminating the need for certainty in operational planning. Within the new Lean supply chain paradigm, logistics professionals can master variability with a two-sided approach, managing the effects of demand variability both on manufacturing capacities and in inventories.

## Global Logistics Strategies: Delivering the Goods

*By John Manners-Bell*




It's the rare supply chain that doesn't have a global component, and logistics managers must achieve new levels of agility and flexibility to keep operations running smoothly. This book addresses six key logistics segments—freight forwarding, contract logistics, shipping, road freight, air cargo, and expedited—and examines major vertical sectors including automotive, chemical, pharmaceutical, and retail. Author Manners-Bell explores emerging global distribution hubs, supply chain risk management, and best practices for outsourcing global logistics management.

**KEY TAKEAWAYS:** Underlying every strategic management decision is a responsibility to deliver reasonable returns on stakeholders' capital investments, while also successfully providing customer-aligned services. To make these decisions, logistics managers must be acutely aware of the global economic and demand-side trends affecting their customers, as well as the unique dynamics of their own market.

## Regulating Transport in Europe

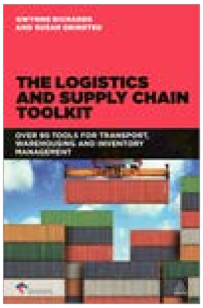
*By Matthias Finger and Torben Holvad, eds.*


Europe's transportation system has experienced substantial changes over the past two decades, in terms of ownership and competition. In this book, a group of academics, economists, and researchers address how regulatory reform has affected Europe's air, rail, road, inland waterway, and intermodal transport. They also provide timely policy recommendations, including possible future European policy initiatives. Logistics professionals managing European operations will gain significant insights about the regulatory issues affecting transport economics and planning for every mode.

**KEY TAKEAWAYS:** The process of liberalization—changes in market access regulations toward a more entry-friendly regime—has profoundly influenced Europe's transportation sector, opening up the market for competition. Liberalization has generally been accompanied by re-regulation, leading to the creation of sector-specific regulatory authorities, whose main role is to open up and sustain markets for the benefit of shippers and transportation providers.


## The Logistics and Supply Chain Toolkit

*By Gwynne Richards and Susan Grinsted*

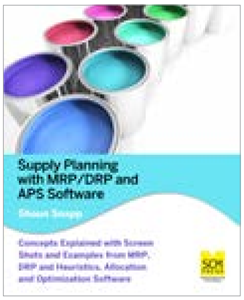



Need a sure fix for subpar pick accuracy? Want an easy-to-follow plan for setting up a Kanban circuit? Wondering how to quickly calculate dock space requirements? This book is packed with more than 90 tools to help supply chain and logistics managers tackle everyday issues related to warehouse and transportation management, logistics technology, and service provider performance. It introduces frameworks, models, quick calculations, and practical ideas that enable you to identify solutions and improve operational effectiveness.

**KEY TAKEAWAYS:** From optimizing warehouse layout to mastering demand forecasting, the tools in this book—along with helpful suggestions about when and how to use them—offer a comprehensive resource for achieving supply chain excellence. The authors also provide guidance on general management and problem-solving strategies, and a companion website supplies electronic versions of many of the tools featured.

## Supply Planning with MRP, DRP, and APS Software

*By Shaun Snapp*

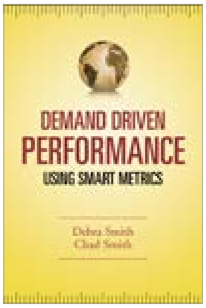



Enterprise software solutions for materials requirement planning (MRP), distribution requirement planning (DRP), and advanced planning and scheduling (APS) can be powerful tools– if you know how to use them. This book explains five different supply planning methods and how they are incorporated into various supply planning applications. It also covers constraint-based and reorder point planning, backward and forward consumption, scheduling, and simulation.

**KEY TAKEAWAYS:** Supply chain managers will learn how to choose the right supply planning method for their operations, avoid common supply planning software implementation issues, and configure software solutions for maximum effectiveness.

## Demand Driven Performance: Using Smart Metrics

*By Debra Smith and Chad Smith*

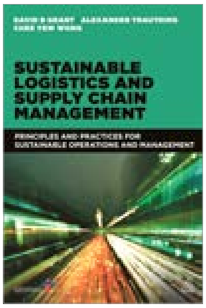



The authors explore the new rules needed to succeed in the complex and volatile global demand and supply landscape. Chapters address types of variability, shifts in management accounting, and the evolution of flow and return on investment. An in-depth case study about Boeing's Dreamliner project helps illustrate the concepts covered, and a cheat sheet for managing a demand-driven performance system gives readers tools to improve their operations.

**KEY TAKEAWAYS:** Metrics tell us how we are doing based on what we want to achieve, yet many companies struggle to define what they want to achieve. Organizations can better respond to demand if they state the problem, discover the root cause, set a framework for managing the organization's operational systems, then define metrics to direct action and align priorities.

## Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management

*By David B. Grant, Alexander Trautrims, and Chee Yew Wong*




Three supply chain sustainability experts offer logistics students and professionals insights on the scope of the supply chain from point of origin to point of consumption; the logistics factors affecting the natural environment, beyond carbon emissions; and in-depth coverage of sustainability issues related to product design, procurement, freight transport, warehousing and storage, purchasing, and reverse logistics. Topical case studies provide real-world examples.

**KEY TAKEAWAYS:** Because logistics and supply chain operations permeate almost every aspect of our lives, their ability to impact the natural environment are significant. Logistics and transportation service providers, shippers, and both government and non-government policymakers share responsibility for greening the supply chain.

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Casebook | by Lisa Terry

# Heroic Logistics Saves The Day for DC Comics

The DC Comics team leaps into action to create special 3D covers for 52 titles, fighting evil production setbacks along the way.

In 2011, multimedia company DC Entertainment—publisher of DC Comics—made a groundbreaking decision: To hit the reset button on its 52 monthly titles, which include Batman, Superman, Swamp Thing, and Aquaman. The September 2011 relaunch—called The New 52—was a huge success, reinvigorating the DC Comics universe and attracting new fans to the comic book company's base of loyal followers.

As the second anniversary of the relaunch approached, the publisher wanted to commemorate the occasion. After discussions with his staff, Dan DiDio, co-publisher at DC Entertainment—which operates offices in New York City and Burbank, Calif.—decided to celebrate the anniversary with three-dimensional covers on the September 2013 issues of all 52 DC Comics titles.

The move would require a radical departure from the normal process of publishing a comic book. Typically, the editorial department places the issue's storyline six months before the publication date. Three months in advance, the writer crafts the story, and one month later, artists pencil, ink, color, and letter the issue. Finally, the completed art heads to the printer in time to drop at comic book stores about two weeks prior to the on-sale date.

Meanwhile, three months before the book hits shelves, the sales staff is talking to comic shop owners about upcoming issues, and the distributor, Diamond Comics, takes title-by-title orders, so DC knows how many copies to print.

To attain its bold vision for the special

September 2013 covers, DC's staff would have to rework that process. Cover concepts would need to be created before editors knew what storyline would appear in the September issue. Artists would be asked to develop images in a new way, suitable for 3D viewing. Covers would have to be printed at a different facility and location, then married up with the interiors. Production planners would be called on to determine print run quantities even before orders were collected.

"The scope seemed daunting," admits DiDio. Nevertheless, the DC Comics team steeled itself to tackle the challenge.

### Forecasting Fan Reaction

Comic book fans are a passionate group, eagerly anticipating the next issue of their favorite titles, and unrestrained in their feedback about the direction a story or character is taking. Many are ardent collectors as well as fans, with some even buying two copies of a title—one to preserve, the other to read. DiDio knew that the 3D art would be a hit.

The question was, how much of a hit would it be?

Typically, DC can base its print runs on a combination of past sales activity and orders placed from comic shops. Store owners know their clientele, and are the best source of information on what titles are resonating and what demand will be. But because of the many steps involved in creating the covers, it wouldn't be possible for DC to shop samples around so store owners could see what the covers would look like in time to place orders. DC executives would have to forecast demand.

DC tested the whole process by creating a very limited run of a specialty book, *Superman Unchained*. A few months before the issues shipped, DC distributed it as an incentive to retailers at regional road shows to generate excitement. The publisher also began releasing animated image files to the media, so fans online could get a sneak peek.

Thematically, each of the 52 issues featured one of DC's classic villains. They dubbed September "Villains Month," tying it into a popular mini-series called *Forever Evil* that focused on villains' storylines.

### A Whole New Angle

The challenge of guessing at print runs would pale in comparison to turning an idea into 52 separate works of art via a new medium: lenticular technology.

Lenticular technology involves printing an interlaced image, comprised of numerous images from different perspectives, on the back of a plastic lenticular lens. The lens serves different perspectives of the interlaced image to each eye, creating a stereographic view—essentially giving two-dimensional prints the appearance of three-dimensionality, without the need for 3D glasses. These images have been appearing in a variety of places, but never before on U.S. comic book covers, and with a feel close to that of paper.

The company that holds the rights to lenticular technology, National Graphics, had approached DC a few years earlier with the idea of using the technology for comic book covers.

"We knew we had to find the right way and time," DiDio says. "We finally found a celebratory event."

Until DC pulled the trigger, National Graphics' full-wrap lenticular printing technology had only been used on one other periodical's cover: an issue of *Rolling Stone*. It was uncertain the technique could scale to the scope DC was planning, and there was no roadmap to follow to ensure everything would go smoothly—which may be one reason it didn't.

### Assembling the Team

All 52 titles in DC's regular run are printed in Montreal, Canada, one month prior to their ship date. But lenticular printing requires much different equipment and


**DC Comics' September 2013 covers feature an unusual print technology to showcase its biggest villains in 3D. Applying lenticular technology to comic books for the first time created myriad logistics challenges for the publisher.**

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materials. DC's production staff located a printer in China that owned the right type of presses.

Next, they had to find a provider that could supply the tons of plastic required—based on a guess at how much would be needed to cover the planned print run, as well as enough extra to accommodate the expected damages and waste.

They decided they would need more than 2.5 million covers in total—25 percent more than the print run for a very successful month. "We found ourselves grabbing every piece of available plastic we could find in one of the key provinces," says DiDio.

### Production Begins

In April and May 2013, a team of artists—separate from those working on the inside of the books—created each of the 52 covers, developing five different images for each one, with help from the vendor's production studio.

Unlike typical covers, which tie closely into the storyline, these would feature individual images of each of DC's infamous villains dominating the foreground, while a detailed background image includes the hero—usually the prominently featured star of the title—in peril. The same process was applied to the back-cover ads, while inside-cover ads were laminated.

When the art was ready, members of the production staff flew to China to oversee the first print attempts—and get a crash course in the vagaries of plastics, humidity, and 3D printing.

One hiccup occurred when the plastic was brought in from a climate with different humidity levels, but not given enough time to adjust. The plastic cooled improperly after the printing process, creating dimpling that ruined the print run.

Early proofs also revealed that in the deepest planes of the image, fine lines would blur, distorting the image. That meant trashing about 150,000 covers, and re-creating the art to address the problem.

The window of opportunity to complete the print run and transport the completed covers by ocean, rather than air freight, was threatening to close. Presses ran around the clock until the run was complete. The entire print job took nearly two months.

"It was a massive learning project, figuring out the kinks," says DiDio. "Over the two-month process, it was touch-and-go two or three times."

> The covers were printed in China, then shipped to Canada to be merged with interior pages. But because the covers were printed on plastic, air freight was out, and lead times grew.

Fortunately, the plastics supply was adequate, and the covers were completed in time. The production staff secured space on a steamship in the China-to-Vancouver lane—a new undertaking for a department accustomed to moving everything via truck. But that wasn't the end of the trouble.

The next deadline was at DC's Montreal-based printer, where the covers would be married up with the interior pages. The production department arranged for over-the-road transport from Vancouver to the Montreal plant, anxiously awaiting delivery.

But then the carrier lost visibility to the two trucks for two days. And when the shipment finally resurfaced, one pallet had tipped over inside the truck, damaging some of the covers. Fortunately, the durable plastic meant the damage was less than it would have been for paper.

The trial run of the incentive title had primed the printer for the process of binding the lenticular covers to the rest of the books, and the remainder of the production process went more smoothly. DC was able to meet its deadline, and produce all 52 titles in time for the second anniversary of the relaunch.

### Magnified Success

The results were a win for everyone. DC Entertainment posted one of its strongest sales months in the history of the company. DC Comics' share of dollars spent in the direct market rose 10 points from 30.2 percent to 40.4 percent for September 2013, according to comics industry website BleedingCool.com.

Comic shops benefited as well, creating excitement among customers, and boosting revenue, because the books were priced slightly higher to cover the additional costs. More than three-quarters of the 52 titles sold out completely.

After some initial shortages for preorders because demand outstripped supply, DC was able to fill back orders from a stash of 50,000 books it had planned for waste. Several titles with lenticular covers now sell on eBay for many times their cover price.

DC isn't rushing to repeat the process just yet—it will be reserved for special occasions. But the experience did teach some valuable lessons in how to plan and execute such a complex and ground-breaking event. For example, "We got strong feedback from retailers that they want to be more involved in the process," says DiDio.

### Hard Work Pays Off

Despite the significant technical and logistical challenges, DC is satisfied with the results of the effort.

"It was an exciting time for us because it was so innovative," says DiDio. "You could see the level of excitement everyone shared as we kept trying and figuring it out. I was challenging the staff, but they rose to the occasion."

Next time they're faced with a daunting production and logistics scenario, the DC Comics team will be suited up and ready for action. ■

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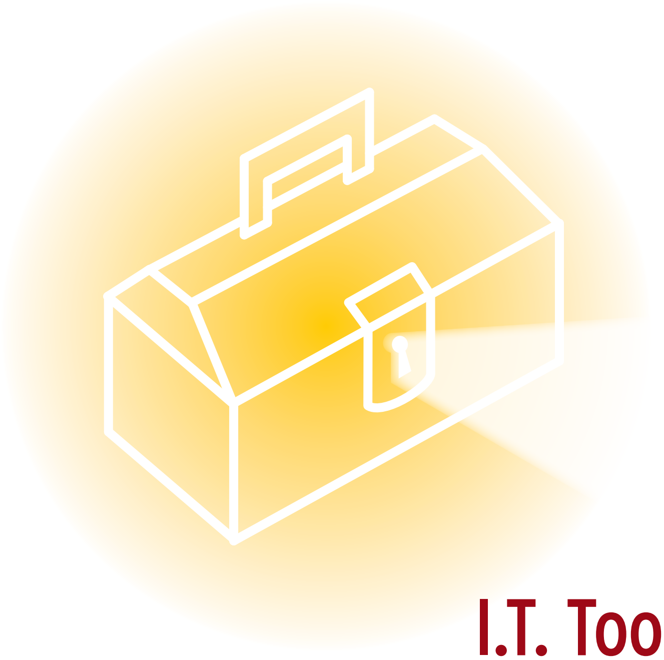

I.T. Toolkit | by Marty Weil

# Drafting a New Route Planning System

Molson Coors Canada's new delivery planning system taps routing, pallet building, and truck loading functionality to optimize shipment flow.

Toronto, Ont.-based Molson Coors Canada is North America's oldest brewer. Founded in Montreal in 1876 by English immigrant John Molson, the company greatly expanded its market over the years. To keep pace with its ongoing business transformation, Molson Coors Canada needed to address a delivery planning system that was decades old, and unable to effectively meet the company's requirements.

Operating six brewery facilities and employing more than 3,000 workers, Molson Coors Canada produces brands that are among the nation's most popular. Coors Light is Canada's leading light beer, and Molson Canadian the number one lager.

As such, the company has to meet demand on a large, growing, and geographically dispersed scale. In Quebec—a province whose territory is nearly three times the size of France—the company delivers to approximately 1,500 retailers and distributors daily.

Part of the challenge Molson Coors Canada faces is managing logistics in a market that has grown in both complexity and size. "As the market changes, so does our way of operating," says James Noonan, project manager at Molson Coors Canada. "The way we build routes has evolved as we've grown."

Updating its delivery planning system was vital. "We needed a system that

# Molson Coors Brews a Route Planning Solution

**Molson Coors Canada uses ORTEC LEO, which is directly integrated in SAP, and improves the beer distribution process through carton, pallet, and load space optimization; order picking, planning, and control; and route planning. The solution consists of five modules:**

- Carton Packing Optimization determines each product's optimal placement and packaging based on data from SAP.
- Pallet Packing Optimization evaluates the quantity and configuration of order-picked pallets on the basis of SAP data, while taking various restrictions – such as pallet type and package weight – into consideration.
- Mobile Logistics Solution uses radio transmission technology for flexible paperless display and optimizing complex order picking and warehouse processes.
- Vehicle Space Optimization plans the physical processes and placement for loading trucks, trailers, rail cars, and airfreight containers.
- Shortest Route Optimization plans delivery routes based on pallet optimization and order picking results.

could accommodate changes to equipment and business practices," explains Noonan.

When Molson Coors Canada began to search for a solution, the company consulted information technology research and advisory firm Gartner's study of logistics technology suppliers to determine the principal players.

## Taking an Integrated Approach

Eventually, Molson Coors Canada decided to employ the ORTEC Logistics Execution Optimizer (LEO), supplied by Atlanta-based technology provider ORTEC. A key factor in the decision was the solution's tight integration with Molson Coors Canada's SAP enterprise resource planning (ERP) solution.

The LEO system went live at Molson Coors Canada in January 2013. The company performed a progressive roll out, with half the facilities in Quebec going live first, and the balance going live two weeks later.

"We had been using delivery planning tools for years, implementing our first route optimization system in 1976," notes Michel Hetu, supply chain business partner at Molson Coors. "We improved the system over time. After all that experience, I expected to face obstacles in getting the new system to provide the same or improved capabilities without impacting customers and employees who had become accustomed to the old system.

"But transitioning to LEO was very smooth," he continues. "We accomplished our goal of moving from a system we were comfortable with to an enhanced solution, without upsetting any of our stakeholders."

From a business perspective, LEO met the three principal goals Molson wanted to accomplish with the technology upgrade: building routes, building pallets, and loading trucks efficiently. Further, the integrated solution improved all three functions significantly.

With the legacy system, dispatchers manually performed all interventions to routing, which was a time- and labor-intensive process. While dispatchers are still involved in interventions, now they can call on LEO to optimize the route sequence.

"The intent was to give the dispatcher more time to analyze results, instead of simply making manual adjustments," says Hetu. With LEO, dispatchers can more easily and rapidly analyze and optimize results.

## Improved Fleet Utilization

Not only does the system handle routing, it also optimizes trucks and pallets, including how pallets are built and loaded on trucks. Because Molson's fleet comprises various types of trucks, the solution has to accommodate different equipment, available footprint, and order sizes—every element that goes into load optimization. The biggest improvement is that route planning and load building happen simultaneously.

This approach represents a significant step forward. Route planning and load building have historically been two distinct, siloed steps, resulting in the need for dispatchers to intervene with intensive manual adjustment. Integrating the functions not only reduces this need, but also frees dispatchers to pursue other opportunities.

Hetu and Noonan cite several other examples of how the new system improves functionality. In the old system, Molson Coors Canada was not using geo-coding—the process of finding associated geographic coordinates, such as street addresses, from other geographic data. With geographic coordinates, routes can be mapped and entered into geographic information systems.

The company was using what it called "local" and "sub-local" territory planning, but this was much less precise than the information geo-coding delivers. Because having a perspective of the geography is a key element in route planning, the geo-coding capabilities represent an important improvement.

Additionally, the company can now visualize applications—for example, see a truck loading in 3D—and support dynamic routing, capabilities the earlier system didn't provide.

"Another important aspect of this solution is that we gain access to any future technology improvements," says Hetu. "With the

legacy system, every improvement meant undertaking a new initiative. But LEO provides enhancements over time as the technology evolves."

**Implementing a route planning system allowed Molson Coors Canada to better plan deliveries to retailer and distributor customers.**

### Sustainable Gains

Sustainability is a key strategic objective of Molson Coors. In its 2013 Sustainability Report, the company announced that between 2008 and 2012, it saved $10 million per year due to increased efficiencies, including reduced energy and water use, reduced waste fees and taxes, and sales of materials that it would otherwise have disposed of. Strategic environmental performance goals through 2020 will result in additional savings of $16 million annually.

In 2013, the company set ambitious new long-term targets to achieve further footprint reductions: 25 percent in energy intensity, 15 percent in greenhouse gas intensity, and 20 percent in water per unit of production by 2020.

Investing in technologies such as the ORTEC LEO optimization suite is in line with Molson Coors' commitment to serve customers quicker, more efficiently, and more sustainably. "The scope of the technology upgrade project was not only to maintain and grow the current business, but also to sustain the business over time," says Noonan. "That was a key requirement, and this solution supports that goal."

Improved carbon emissions and reduced energy usage are among the sustainable goals LEO will help support by optimizing routes, loads, and pallets; reducing load planning time; increasing trailer utilization; and eliminating empty miles.

### Trending Now

Molson Coors' decision to integrate route planning, pallet building, and truck loading exemplifies a larger trend in the logistics sector to "do more with less" through dynamic freight handling strategies. Shippers face significant challenges in today's commercial environment:

- Demand variation is high and often volatile.
- Markets—and the supply networks serving them—are increasingly nuanced and complex.
- Multi-channel capabilities are proliferating, increasing pressures on supply networks and underscoring the importance of demand-driven logistics.
- The need for speed is greater than ever—and increasing.

What is sometimes lost in handling these challenges is the power of executing the basics. Molson Coors Canada leveraged new logistics technology solutions to combine the basic functions of routing, pallet building, and truck loading, and gain significant and sustainable advantages. ■

# Supporting the Next Generation of Logistics Leaders

## Announcing the Inbound Logistics/AST&L Scholarship Program

When *Inbound Logistics* began its commitment to advancing logistics and supply chain education, traffic and transportation were taught as subsets of business courses. Today, global supply chain courses are available in countless schools, and through distance learning programs worldwide. To celebrate that achievement, *Inbound Logistics* – in association with our partners at the American Society of Transportation & Logistics (AST&L) – proudly announces its second annual $2,500 undergraduate scholarship.

To apply, students will be asked to submit a 2,000-word essay on why they chose a logistics and supply chain career, and how they envision that career impacting the company they will work for, as well as the U.S. and global economy.

Submissions must be received by March 31, 2014. One winner will be awarded the scholarship in June 2014, and featured in our June 2014 careers and education issue. For more information, email scholarship@inboundlogistics.com

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DC Solutions | by Suzanne Heyn

# DSW Tries On New SKUs and Stocks

Shoe retailer DSW pairs a new replenishment system with an automated materials handling solution to step up inventory control.

National shoe retailer DSW is well-heeled in selling name-brand shoes at a discount. As the Columbus, Ohio-based chain grew over two decades in business, it developed relationships with shoe vendors and shifted the way it bought merchandise. Those shifts led DSW to examine how it handled its inventory. Today, the company has greater control over the shoes it purchases, and is able to re-stock stores by the unit, ultimately reducing markdowns.

When DSW opened its first store in 1991, it operated as a closeout retailer. The company would buy excess merchandise at a discount from multiple shoe companies, often late in the season, then pass the savings on to customers.

"We weren't always sure exactly what sizes we were going to get," says Jeff Girard, vice president of distribution and direct fulfillment at DSW. The business model worked, but limited the way DSW replenished stock.

"We would send a store a full case of shoes in the same style and color, in multiple sizes," Girard says. "After the store sold a few pairs out of that case, we would send another case." That new case replenished the sizes sold, but also resulted in the store accumulating sizes not sold, a practice that resulted in frequent markdowns.

"We couldn't manage inventory at the size level because we never knew if we were going to have those exact sizes in our distribution center," Girard explains.

As DSW grew—today, it operates nearly 400 stores nationwide—its increasingly strong vendor relationships allowed it to buy some shoe styles earlier in the season. That shift allowed DSW to order a specific number of sizes in each style.

"Once we had that ability, we identified an opportunity," Girard says. If a store sold sizes eight, nine, and 11 out of one carton, DSW wanted to try replenishing only those sizes, instead of sending a full case that also contained unsold sixes and sevens.

"Replenishing inventory that way provides two benefits," Girard notes. "First, it avoids displaying non-productive inventory—such as more than one size 11 shoe—on the sales floor. Second, it translates into fewer markdowns in the long run."

This new replenishment strategy required that DSW fundamentally change how it handled merchandise in its Columbus DC. Never before had the company sorted shoes on the unit level, but the opportunity was too attractive to pass up.

### Trying on a New Method

In fall 2009, DSW tested the new replenishment method with a few stores and SKUs. "The trial was small in scale, but successful," Girard says. "So we decided to roll it out fully in 2010."

At first, DSW processed merchandise manually. Throughout the DC, workers organized racks fitted with plywood shelves. On the shelves, they placed empty cartons, each representing one store. When workers sorted waves of merchandise, they took a case of shoes to the racks, packed the needed sizes into the appropriate store's box, and retained the extra shoes in a designated residual area. Once a store's carton was filled, workers would tape it up, palletize the cartons that were ready for shipment, and transport them by forklift to a conveyor belt.

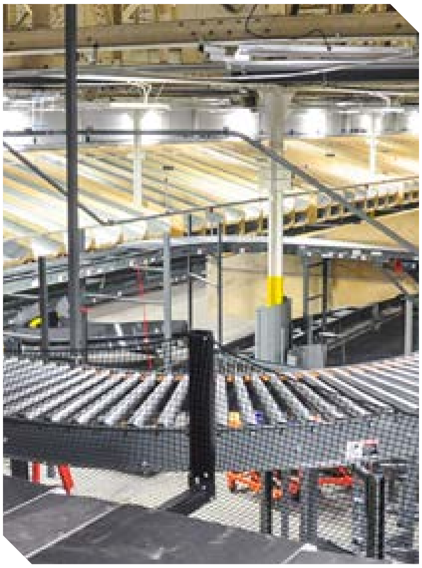
DSW started with one line to accommodate the one million units estimated to ship, and ended up with three lines. Each unit represents one pair of shoes.

"We wound up handling 4.3 million units," Girard recalls. "It put a real strain on the DC because the facility wasn't set up to handle that volume." DSW realized the manual system would max out at around five million units, so it needed to automate.

The company hired a consultant and investigated several different systems, including mobile robots, an automated put-to-store solution, and a fully automated unit sortation system. DSW ultimately selected the automated unit sortation system, which promised the greatest capacity and productivity.

After issuing a request for proposal, DSW selected Beumer Group—a distribution equipment manufacturer with U.S. offices in New Jersey—to design and install the system. Although Beumer had not previously worked with DSW, it had completed automation projects for several footwear manufacturers.

"DSW had a basic idea of what it wanted to accomplish in terms of the number of daily orders it could ship out of the DC," says



**Conveyor belt segments in the DSW facility push merchandise into designated chutes.**

Lance Anderson, Beumer's director of sales, sortation, and distribution. "But because the facility had zero automation, the company didn't know how to conceptualize, design, and fit the automated system into the existing operation to make its goals a reality."

The two companies began working together in fall 2011, and the new system was operating by December 2012. DSW installed a BS-7 belt tray unit sorter, which carries products through the packing area on a conveyor belt. Individual segments on the belt discharge product into designated chutes. Where the manual system featured a carton for every store, the automated system instead provides chutes for each store.

Space constraints complicated the installation. DSW's World War II-era facility was originally used to build military aircraft, not distribute shoes. DSW installed the equipment in a 1,400-foot by 100-foot mezzanine, which required shrinking the equipment by 40 percent while maintaining the same output.

"We designed our way around bathrooms, pipes, and columns," Anderson recalls. "It was a challenge to fit it in." Accommodations included designing the sorter so it had chutes on three legs, instead of the standard four.

After the new system was installed, Beumer conducted a standard two-week training program for DSW employees. "It's a challenge to retrain existing employees, who essentially have to learn entirely new jobs," Anderson says. "It's much harder than training new employees."

### Feed for Thought

After it selected the equipment, DSW's next task was to identify the best processes to feed the sorter.

Before the automation, "most of the boxes were being crossdocked, which led to a lack of organized storage," Anderson says. Today, DSW must store the product SKU by SKU, and pick merchandise daily to feed the sorter in the correct sequence.

"We spent months locked in rooms talking about the flow," Girard says. "A sortation system only works if you keep it fed all the time. If you don't keep merchandise flowing into it, you lose productivity because workers don't have anything to pack."

DSW also wanted to pack merchandise in a way that simplified stocking for in-store associates. Ultimately, the company devised a system that involved identifying 10 product categories—such as men's formal and women's casual — and establishing a series of staging areas.

When the company runs a wave for men's formal, for example, workers place a pallet of that category of shoes into a staging area. The warehouse control system then assigns a color, say blue, to that category, and a blue light turns on.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After the first area fills, overflow moves in a second area, and another blue light blinks on. Workers picking product know they can stock pallets of men's formal in the areas illuminated by blue lights. Meanwhile, women's casual might receive a yellow light.

"That system enables the staging of multiple categories at the same time," Girard says. "When I'm ready for men's formal, for instance, the person controlling the sorter hits a button, and all the blue lights go on." Workers proceed to the blue lights to pick merchandise, then head to the sorter.

In a decasing area, DSW workers remove four or five units at a time from a box, and lay them on a conveyor belt that automatically aligns the boxes. The belt feeds the boxes to automatic cross-loading inductions that place the items accurately on the sorter. The sorter then delivers the individual boxes to a chute with an order requiring that SKU.

## Mixing and Matching

DSW's stores share similar layouts: men's dress on the far left, followed to the right by men's casual, men's athletic, women's athletic, and so on. To minimize transportation costs, the last few men's dress cartons include a few units of men's casual. "That's OK because those products are right next to each other in the store," Girard says. "That enables us to fill every case, so we don't have to shut down the sorter from one category to the next. It also minimizes the time store associates spend jumping around between categories."

Another customization DSW needed in its automation system was driven by the assortment of box sizes. Because it ships products manufactured by multiple companies, DSW has no control over box size. Shoes also differ dramatically in size—from narrow boxes for women's high heels to 27-inch-long boxes holding tall boots.

A standard chute would have resulted in lids popping off boxes and possible damage, which generated two concerns. First, DSW displays all its boxes on store floors. Damaged boxes could create the impression that the shoes inside fall short of quality standards. Second, chutes that cause box lids to go flying would require DC employees to chase them down, negating any productivity improvements the automated system might bring.

To make sure the equipment could gracefully handle the wide range of box sizes, DSW representatives traveled to Beumer's factory in Germany to work with engineers designing the chutes. The result was double-level, half-pipe chutes, with a special lip on the end that allows workers to easily slide boxes out from the chutes while protecting merchandise.

"Having 20 or 30 boxes lined up in a chute puts a lot of pressure on the front box," Anderson says. "It's actually hard to pick up." Adding a lip at the end of the chute addresses that issue.

Once the system was ready for action, DSW waited until a slow time in its production cycle to flip the switch. "Timing is key to a successful implementation," Anderson notes. "Don't start a new system two weeks before Black Friday, and hope it works."

DSW opted for a December start date, after all its merchandise had shipped for winter. "We expected to have a ramp-up period until August, where we wouldn't hit full business productivity because we knew we'd have to work all the bugs out," Girard says. "But we were up to speed by April 1."

Changes in the replenishment system and the move to automation have resulted in significant cost and productivity improvements. Productivity, measured in units per hour, has increased by 120 percent, Girard says.

Although switching to a unit-based model of handling merchandise increased DC operating expenses, the automated sortation system reduced costs by more than half when compared to manually sorting product. The new equipment can handle up to 25 million units annually—a 500-percent increase over the manual method. And although DSW currently uses the equipment for shoes only, the sorter can also handle accessories, such as handbags, which the chain also sells.

**DSW distribution center workers stand ready at chutes to pack merchandise fresh off the automated sortation system.**

These changes have helped to establish DSW as the go-to store for shoes, enhancing its brand value by increasing in-stock rates. In the past, Girard heard anecdotally from friends and family: "You always have great products, but you just don't have my size."

"The automated system and new replenishment strategy have gone a long way toward fixing that," Girard says. ■

# CALENDAR | YOUR LOGISTICS DATEBOOK

MAR 17

MHI

## MODEX 2014

www.modexshow.com | Atlanta, Ga. | thru March 20

**AUDIENCE:** Manufacturing, distribution, and supply chain professionals
**FOCUS:** Shipping trends for global supply chains, materials handling industry report, keynote speech from former CEO of Walmart, materials handling exposition

## CONFERENCES

**FEB 23–26, 2014** San Diego, Calif.
Retail Industry Leaders Association (RILA)

### Retail Supply Chain Conference 2014

www.retailsupplychain.org

**AUDIENCE:** Stakeholders in the retail supply chain, supply chain managers, distribution professionals, manufacturers
**FOCUS:** Supply chain education, international sourcing, transportation, distribution, omni-channel, inventory management, leadership and development

**MAR 17–19, 2014** Nashville, Tenn.
Transportation & Logistics Council

### 40th Annual Transportation & Logistics Council Conference

www.tlcouncil.org

**AUDIENCE:** Transportation, logistics, and supply chain professionals
**FOCUS:** Contracting for transportation and logistics services, freight claims, transportation and logistics law, preventing cargo theft, loss prevention

**MAR 18–19, 2014** Atlanta, Ga.
Center for Innovation of Logistics

### Sixth Annual Georgia Logistics Summit

www.georgialogistics.com

**AUDIENCE:** Transportation, logistics, and supply chain professionals
**FOCUS:** International logistics, manufacturing, serving international markets, tomorrow's supply chain

**APR 7–8, 2014** Atlanta, Ga.
Terrapinn

### Home Delivery World 2014

www.terrapinn.com/homedelivery

**AUDIENCE:** Supply chain, transportation, fulfillment, logistics, e-commerce, information technology, and warehousing professionals
**FOCUS:** Developing a carrier management program, optimizing final mile delivery with technology, expanding into international markets

**APR 13–16, 2014** Orlando, Fla.
National Shippers Strategic Transportation Council

### NASSTRAC Annual Shippers Conference & Transportation Expo

www.nasstrac.org

**AUDIENCE:** Transportation and supply chain executives, logistics providers, manufacturers, retailers, distributors
**FOCUS:** Capacity challenges, cost management, issues facing carriers, CSA, Hours-of-Service, fuel surcharges

**APR 26–30, 2014** San Diego, Calif.
Global Cold Chain Alliance

### 123rd IARW-WFLO Convention & Expo

www.gcca.org

**AUDIENCE:** Cold supply chain professionals
**FOCUS:** Domestic and international market development, warehouse law, risk management and liability, operations management, best practices in talent management, cold chain exhibition

**APR 27–30, 2014** Chicago, Ill.
Warehousing Education and Research Council

### WERC 2014

www.werc.org

**AUDIENCE:** Warehousing, distribution, fulfillment, supply chain, and logistics professionals
**FOCUS:** Annual WERC distribution center study, facility tours, warehousing industry trends, the supply chain in 2030, synchronizing inbound transportation and distribution, warehousing exposition

**MAY 5–8, 2014** Las Vegas, Nev.
American Wind Energy Association

### WINDPOWER 2014

www.windpowerexpo.org

**AUDIENCE:** Wind energy industry supply chain stakeholders and manufacturers
**FOCUS:** Wind energy market forecast, what OEMs and supply chains are doing to lean manufacturing, offshoring and cost reduction, lowering the cost of production

**MAY 19–23, 2014** Hannover, Germany
Deutsche Messe AG

### CeMat 2014

www.cemat.de

**AUDIENCE:** Manufacturing, retail, supply chain, materials handling, warehousing, and distribution professionals
**FOCUS:** Hazardous material transport, green logistics for the global economy, career fair, materials handling exposition

## SEMINARS & WORKSHOPS

**MAY 4, 2014** Lansing, Mich.
MSU Broad College of Business

### Supply Chain Logistics Management Executive Seminar

edp.broad.msu.edu/events/16

**AUDIENCE:** Supply chain and logistics managers
**FOCUS:** Synthesizing logistics theory, structure, technology, and principles to achieve a superior supply chain; how logistics and integrated supply chain management contribute to competitiveness

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# White Paper Digest

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.


## Amber Road

**TITLE:** ***Managing Global Trade: Rising Importance but Lagging Execution***

**DOWNLOAD:** *bit.ly/1dkzc4v*

**SUMMARY:** In order to capitalize on global trade opportunities, organizations must overcome a series of unique supply chain and regulatory compliance challenges. Download this report to learn the most effective strategies for solving these global trade challenges.

## Kronos

**TITLE:** ***Overcoming the Frontline Talent Crisis in Logistics***

**DOWNLOAD:** *bit.ly/1eIUQDZ*

**SUMMARY:** How can you bring your hiring practices to a higher level? Do you have the qualified, skilled, and safety-minded employees to meet all your operational demands? And how do your current hiring strategies help you to do so? When it comes to your frontline talent, these questions demand answers. And fast. Find them by downloading *Overcoming the Frontline Talent Crisis in Logistics*. It outlines how the overall quality and performance of your logistics operations hinge on your strategy for identifying and hiring the right frontline employees with the right skills – right now.

## Ryder

**TITLE:** ***10 Best Practices for Running A Leaner, Greener Transportation Network***

**DOWNLOAD:** *bit.ly/19BURnn*

**SUMMARY:** Organizations wrestling with rising transportation costs; supply chain inefficiencies; complex routes with multiple stops; or the daily challenges of managing carriers, plants, and competitive lanes are looking for better transportation alternatives. What is one of the best ways to achieve a more effective transportation network? Integrating Lean practices into every aspect of transporting goods. To learn the 10 best practices associated with building and running a Lean transportation network, download this whitepaper today.

# WhitePaperDigest


## Geodis Wilson

**TITLE:** ***U.S. Customs and Border Protection Transforming U.S. Trade***

**DOWNLOAD:** *bit.ly/18fc9YY*

**SUMMARY:** When it comes to global economic competitiveness, the United States is not as strong as it once was. To help mitigate this trend, U.S. Customs and Border Protection has made it a priority to transform customs procedures to better align with modern business practices. The Centers of Excellence and Expertise (CEEs) are an integral part of those efforts. This whitepaper examines what CEEs mean for importers and brokers, what changes they can expect, and how CEEs might enable more streamlined and efficient customs processes in the future.

## Llamasoft

**TITLE:** ***Supply Chain Simulation: Why Its Time Has Come***

**DOWNLOAD:** *bit.ly/JFc7hE*

**SUMMARY:** What if you could predict how your supply chain would perform under any circumstance? It's possible through supply chain simulation, a unique form of analysis that truly factors time and variability into each individual transaction, decision, and movement throughout the supply chain. Download this whitepaper to learn why the time for supply chain simulation has come. You'll discover how simulation has become a vital component of the supply chain design function within leading global companies, enabling them to predict service, test inventory policies, analyze production capacity, and determine asset utilization.


## Saddle Creek

**TITLE:** ***Optimizing Distribution Networks for a Competitive Advantage***

**DOWNLOAD:** *bit.ly/SC-DC-Net*

**SUMMARY:** Today, more and more companies are finding value in optimizing their distribution network. By taking a strategic approach to network configuration, they are improving service levels, better managing inventory, and reducing transportation costs. Less demanding in terms of infrastructure, systems, cost, and time than full-scale supply chain optimization, this targeted approach delivers remarkable results. Download this new report for a closer look at how distribution network configuration can impact supply chain effectiveness.

## TMW Systems

**TITLE:** ***Five Warning Signs of an Inefficient Fleet—and How to Avoid Them***

**DOWNLOAD:** *bit.ly/TMW5Signs*

**SUMMARY:** A fleet operation is inefficient whenever vehicle capacity goes unused, when vehicles put on more miles than necessary, and when drivers sit at the wheel instead of serving customer needs because of poor scheduling and inefficient routes. If you know what to look for, there are five warning signs of fleet inefficiency that can also point to cost savings and productivity opportunities. Download this whitepaper to learn more.

# WhitePaperDigest


## Weber Logistics

**TITLE:** ***How to Reduce Chargebacks in Your Vendor Compliance Program***

**DOWNLOAD:** *bit.ly/18CpunO*

**SUMMARY:** Retailer chargeback fines for non-compliant shipments are a profit-draining reality. But retail suppliers with the will and resources to prevent and refute chargebacks can avoid hundreds of thousands of dollars in lost profit. This Weber Logistics whitepaper provides background on the origins and rationale for chargebacks, followed by a seven-step process for avoiding or overturning these costly penalties.

## Kane is Able

**TITLE:** ***Reduce LTL Costs with Collaborative Freight Strategies***

**DOWNLOAD:** *bit.ly/Hwzda3*

**SUMMARY:** For smaller shippers, there are alternatives to the higher cost and unpredictable schedules of LTL carriers. A new Kane whitepaper, LTL Secrets Revealed, explores some of these collaborative freight strategies, including pool distribution and retail consolidation. It also shares some secrets that LTL carriers don't want you to know, such as how legacy costs inflate their rates and how shipments can take longer than you'd expect. Find out more in this free whitepaper.


## Tompkins International

**TITLE:** ***Personalized Multichannel Logistics***

**DOWNLOAD:** *tompkinsinc.com/white-paper/2013/multichannel-logistics-beyond-distribution-fulfillment-centers*

**SUMMARY:** "Flawless" is the word used to describe customer expectations in this new whitepaper from Tompkins International. It is no longer about how companies want to deliver the product to the customer, but about how the customer chooses to have the product delivered. Traditional distribution centers (DC) and fulfillment centers (FC), respectively, only serve one channel. A flexible DC, FC, or combination of both, makes the most sense for meeting today's customer demands. Download this whitepaper to explore how to reap the benefits of implementing flexible fulfillment and distribution operations.

## GT Nexus

**TITLE:** ***Holistic Supply Chain Management: A Focused Approach to Supply Chain Management through the Lens of Working Capital Management***

**DOWNLOAD:** *bit.ly/1cm9vga*

**SUMMARY:** There has been renewed interest over the past few years around optimizing working capital in the supply chain, and cloud technology makes it easier. Visibility on a cloud-based platform, and having standardized, electronic documentation over the network, gives managers the tools they need to free up as much cash as possible in the supply chain. More information is available in this free download.

## 3PL Central

**TITLE:** ***The Five Must-Have Attributes of the Modern Smart Warehouse***

**DOWNLOAD:** *bit.ly/16ziIQZ*

**SUMMARY:** The era of the Smart Warehouse is upon us. To learn what your warehouse should be doing to make itself "smarter" in today's ever-changing world, download 3PL Central's whitepaper, *The Five Must-Have Attributes of the Modern Smart Warehouse*, today.


## enVista

**TITLE:** ***Don't Just Report on Vendor Non-Compliance, Minimize It***

**DOWNLOAD:** *bit.ly/16KsB2P*

**SUMMARY:** Improved vendor management offers several important implications to your business, including: improved customer service, minimized lost sales, and significantly increased profits. In this whitepaper from enVista, you'll learn how to develop strategic vendor management programs to achieve significant cost savings, and ways to effectively mitigate vendor non-compliance activity before it happens.

## UTi Worldwide

**TITLE:** ***Developing a Roadmap Toward Global Vehicle Platform and Supply Chain Harmonization***

**DOWNLOAD:** *bit.ly/1bKaZSa*

**SUMMARY:** The 2008 global recession fundamentally changed the way automotive OEMs design, source, build, and sell vehicles. Accelerating consumer demand for new models and the adoption of global platform strategies requires greater collaboration among OEM partners deeper in the supply chain. Download UTi Worldwide's whitepaper today for more information.


## Aberdeen Group

**TITLE:** ***Strategic Inbound Optimization: Foreign Trade Zones and Reshoring Increase***

**DOWNLOAD:** *bit.ly/1ch2vnm*

**SUMMARY:** To more strategically optimize inbound transportation costs, companies must consider alternate sourcing and trade options, and how these will impact their total costing analysis. Among the top inbound optimization considerations are the addition of Foreign Trade Zones (FTZs) and reshoring processes, both of which offer duty- and tariff-reduction opportunities. This whitepaper shows you how to leverage FTZs and reshoring alternatives in your inbound program to deliver both quality service and competitive costs.

### Share your whitepaper with *IL* readers!

***WhitePaper Digest*** **is designed to bring readers up-to-date information on all aspects of supply chain management. We're building a database of SCM whitepapers, and you can help. E-mail us with whitepaper recommendations: editorial@inboundlogistics.com**

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K ◯ 250-499 L ◯ 500-999

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- 6 ◯ Services: (Medical/Health, Financial, Insurance, Legal, Gov't., Consulting, etc.)
- 3 ◯ Agriculture, Construction, Engineering, Mining
- 4 ◯ Utilities (Water, Power, Electric, Gas), Telecommunications
- 5 ◯ Transportation, Logistics & Supply Chain Services (Carrier, Broker, Freight Forwarder, Transportation Intermediary, 3PL, Warehouse/DC)
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- P ◯ Supply Chain Management, Purchasing, Procurement
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# LOGISTICS EVENTS 2014

# WHERE TO GO WHAT TO SEE

A few days away from the office can recharge your batteries and renew your passion for your work. To help you plan the year ahead, *Inbound Logistics* assembled this list of industry conferences that provide the insights and best practices you need to hit the ground running.

FEB

MAR

**FEB 23-26, 2014**
San Diego, Calif.
### Retail Supply Chain Conference 2014

Retail Industry Leaders Association (RILA)
**retailsupplychain.org**

This conference addresses current and relevant issues facing the retail industry. With RILA's focus on supply chain education, attendees will gain exposure to best practices and leading strategies, as well as networking opportunities with experts who can help boost supply chain execution.

**MAR 17-19, 2014**
Nashville, Tenn.
### 40th Annual Transportation & Logistics Council Conference

Transportation & Logistics Council
**tlcouncil.org**

General sessions and workshops touch on all transportation modes, and address a wide range of topics including regulatory compliance, risk management, loss and damage claims, and freight charge liability. Pre-conference seminars are also available, covering transportation law, freight claims, contracting for logistics services, and a Certified Claims Professional primer class.

**MAR 17-20, 2014**
Atlanta, Ga.
### MODEX 2014

MHI
**modexshow.com**

MODEX attendees will see demonstrations, and learn about the latest innovations from more than 800 logistics, materials handling, and manufacturing solutions providers. Through exhibits, general sessions, keynotes, and educational partner events, participants will hear success stories and learn best practices and tools to apply to their own companies.

**MAR 17-20, 2014**
Atlanta, Ga.
### Supply Chain & Transportation USA

Reed Exhibitions
**supplychainusaexpo.com**

Supply Chain & Transportation USA is a one-stop buying and educational experience for supply chain executives sourcing transportation services, logistics infrastructure, industrial real estate, IT solutions, and sustainable transportation options. Attendees can examine products and solutions firsthand, and network with providers dedicated to transportation, logistics, industrial real estate, and the future supply chain.

**MAR 18-19, 2014**
Atlanta, Ga.
### Sixth Annual Georgia Logistics Summit

Center for Innovation for Logistics
**georgialogistics.com**

The Georgia Logistics Summit is packed with valuable business information and networking opportunities. Keynote speakers and sessions address topics including the complexity of serving domestic and international markets, tomorrow's supply chains, the logistics of manufacturing, growth and expansion in Georgia, and partners and possibilities in international logistics.

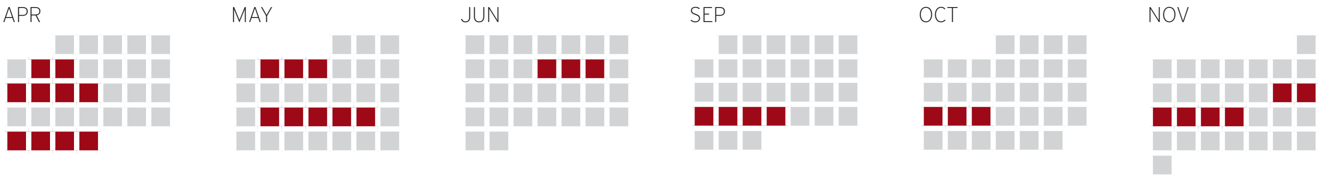
**MAR 23-35, 2014**
Phoenix, Ariz.
### 2014 IWLA Convention & Expo

International Warehouse Logistics Association
**iwla.com**

This year's theme is *It's About Your People*. Keynote speakers will highlight the importance of team-building, effective leadership, and how hiring the right people can contribute to success in serving warehouse customers. In addition, the exhibition presents the latest in warehousing and logistics solutions.

# LOGISTICS EVENTS 2014

# WHERE TO GO. WHAT TO SEE.




**APR 7-8, 2014**
Atlanta, Ga.
## Home Delivery World 2014

Terrapinn
**terrapinn.com/homedelivery**

Through a combination of strategic keynote presentations, case studies, and collaborative roundtable discussions, this event gives retailers and last-mile shippers the opportunity to design their own conference experience. Panels cover topics including the latest models and strategies for optimizing the delivery lifecycle, improving order efficiency, integrating a seamless supply chain into your omni-channel experience, and maintaining brand consistency across all touchpoints.

**APR 13-16, 2014**
Orlando, Fla.
## NASSTRAC Annual Shippers Conference & Transportation Expo

National Shippers Strategic Transportation Council
**nasstrac.org**

Sessions cover topics ranging from capacity challenges and cost management to carrier issues, CSA, Hours-of-Service regulations, and fuel surcharges. This conference attracts transportation and supply chain executives from manufacturers, retailers, and distributors, as well as third-party logistics providers and carriers.

**APR 27-30, 2014**
Chicago, Ill.
## WERC 2014

Warehousing Education and Research Council
**werc.org/2014**

This conference focuses on education and practical takeaways for logistics and warehousing professionals. Attendees can participate in panels, educational sessions, a variety of tours, and a large materials handling exhibition.

**MAY 5-7, 2014**
Las Vegas, Nev.
## ISM Annual International Supply Chain Management Conference

Institute for Supply Management
**ism.ws/conferences**

The Institute for Supply Management's conference focuses on professional development for supply chain managers. Multiple learning tracks based on current industry issues are available, as well as a series of facility tours.

**MAY 19-23, 2014**
Hannover, Germany
## CeMAT 2014

Deutsche Messe AG
**cemat.de**

The keynote theme of CeMAT 2014 is *Smart-Integrated-Efficient*, refering to intelligent management of integrated logistics chains along the entire supply chain. Special emphasis will be placed on user issues, including port handling systems; retail logistics; bulk and packaged goods; pharmaceuticals; and hazardous materials and disposal. Materials handling exhibits are divided into five categories: move and lift, store and load, pick and pack, logistics IT, and manage and service.

**JUN 11-13, 2014**
Edmonton, Alberta, Canada
## SCMA National Conference

Supply Chain Management Association
**scmanational.ca**

Procurement executives and supply chain decision-makers will gain insight from educational sessions, pre-conference seminars, case studies, facilitated discussions, organized networking, and keynote speakers. Attendees will learn best practices, industry developments, and practical solutions that have immediate applications.

**SEPT 21-23, 2014**
Long Beach, Calif.
## Intermodal Expo 2014

Intermodal Association of North America
**intermodal.org**

Members of the intermodal freight community can attend educational sessions and network with peers and other industry leaders. The show floor features demonstrations of the latest intermodal-related innovations and technologies.

**SEPT 21-24, 2014**
San Antonio, Texas
## CSCMP Annual Global Conference 2014

Council of Supply Chain Management Professionals
**cscmpconference.org**

This conference offers supply chain management practitioners insights into cutting costs, improving the bottom line, discovering new ideas to keep supply chains competitive, and finding solutions to improve productivity and efficiency. Presentations focus on creating more sustainable, resilient, and value-driven supply chains, and an exhibition showcases the latest innovations in supply chain and operations management solutions.

**OCT 19-21, 2014**
New Orleans, La.
## APICS 2014

APICS
**apics.org**

Education, best practices, and thought leadership help attendees lead their organizations toward goals such as achieving maximum productivity, meeting consumer demand, and remaining agile amid instability or unpredictability.

**NOV 14-19, 2014**
Fort Lauderdale, Fla.
## 2014 NITL Conference & TransComp Exhibition

The National Industrial Transportation League
**nitl.org**

The annual NITL conference presents attendees with workshops and educational sessions about key transportation industry issues across all modes. The TransComp Exhibition gives transportation and logistics executives access to providers showcasing the latest innovations in information technology, management tools, and distribution operations.

**Browse the next few pages for more details about some of 2014's premier supply chain, logistics, and transportation events. →**


Save the date:
19–23 May 2014


**AirBridgeCargo** added a fifth Boeing 747-8 Freighter to its fleet. The new aircraft operates on the carrier's existing routes linking Europe, Asia, and the United States via its Moscow hub.

## // Services //

**Yusen Logistics** opened a second warehouse in Russia, approximately 12 miles south of Moscow. The 65,000-square-foot facility supplies inventory management and inland transportation services to consumer goods companies in Russia.

To provide more in-depth freight coverage to the Midwest, **Estes Express Lines** opened a 34-door terminal in North Chicago. The new facility provides additional support for demand previously handled only by the company's Chicago and Eglin, Ill., terminals.

International logistics provider **ChemLogix Global**, supply chain management service provider **VistaLogix Global**, and recently acquired **LHC Consulting** merged under one brand name to reflect their parent company, **CLX Logistics**. The subsidiary company names will be phased out throughout 2014.

Last-mile, order fulfillment, and supply chain management provider **Fidelitone Logistics** relocated its Anchorage, Alaska, facility to a larger location. The new facility offers fulfillment and warehousing services, provides access to the Port of Anchorage, and enables one- to two-day order fulfillment throughout Alaska.

**The Port of Los Angeles** began two roadway projects to improve the Harbor I-110 Freeway, and increase safety and ease of operation for drayage handlers, allowing for more efficient cargo movement. The work is scheduled to be completed in fall 2016.

Laredo, Texas, is home to a new **APL Logistics** facility. The new facility offers a range of customs brokerage and trade services, and supports import and export management through the ports of Hidalgo/Pharr, Progreso, Brownsville, Eagle Pass, and Del Rio.

**NYK** partnered with logistics provider **Puninar Jaya** to form **NYK Puninar Auto Logistics Indonesia**. The new company offers transportation, storage, pre-delivery inspection, and customs clearance on imports and exports to Indonesia's automotive industry.

Truckload carrier **Schneider National** added 600 intermodal chassis to its fleet, enabling the carrier to provide well-maintained equipment to shippers. The chassis also weigh 500 pounds less than standard chassis, allowing shippers more freight capacity per load.

LTL carrier **Dayton Freight Lines** relocated its Wisconsin Rapids, Wis., terminal to provide more efficient service to shippers in the region. The new facility in Mosinee features 14 doors, and brings Dayton Freight closer to its main customer base.


**European multimodal solutions provider Samskip Multimodal B.V. and Turkish logistics provider Intercombi Transport launched a joint initiative, GreenBridge Multimodal, to provide multimodal transport between Turkey and Europe, and offer door-to-door and terminal-to-terminal services.**

**Clean Energy Fuels Corporation** opened a liquefied natural gas station in Jacksonville, Fla. The location provides green fueling options for carriers and fleets in the Jacksonville area.

**DHL Global Forwarding** broke ground for a new terminal at Chicago's O'Hare International Airport. The location will provide 53,000 square feet of office space, and 432,030 square feet of warehousing space. The facility, scheduled to open in November 2014, will be designated as a Container Freight Station and a Foreign Trade Zone.

**TNT Express added 10 countries to its intercontinental Express Freight services, bringing the number of countries in its network to 80. The expansion includes additional North America business locations in cities including New York; Washington, D.C.; Atlanta; Hartford; Chicago; Philadelphia; Portland; Toronto; Montreal; and Ottawa.**


Overnight shipping carrier **OnTrac** consolidated operations in Fresno, Visalia, and Kettleman, Calif., into a new 90,000-square-foot facility in Visalia. The centralized location allows OnTrac to deliver to any ZIP code in California overnight.

**Northwest Iowa Economic Development** secured approval from the U.S. Foreign-Trade Zones Board to establish an FTZ in Northwest Iowa. The designation is expected to attract investment and boost trade in the region.

**Old Dominion Freight Line** expanded its Fort Myers, Fla., service center. The new 16-door facility is located midway between Miami and Tampa on Interstate 75, and serves a number of industries, including retail, tourism, and manufacturing.

A new intermodal route operated by **Union Pacific** connects Mexican manufacturers with retailers and distribution centers in the southeastern United States. The third-morning service, which runs between Laredo, Texas, and Memphis, Tenn., primarily supports the automotive industry.

Air carrier **Cathay Pacific** moved its United Arab Emirates-based freighter operations from Dubai International to Al Maktoum International Airport at Dubai World Center. The new location, near the Jebel Ali Freezone and the Jebel Ali Port, is Cathay Pacific's transit hub for European destinations.

Chemical transport specialist **Miller Transporters** opened a new terminal in Freeport, Texas. The new location offers local, regional, and over-the-road tank trailer service to the chemical and energy sectors.

The Estey Corporation established **Island Logistics**, a new third-party logistics company. The firm offers warehousing, order fulfillment, pick-and-pack, customized packaging, crossdocking, and order consolidation services from its 60,000-square-foot Portland, Ore., warehouse.

## //Products//

**Toyota Materials Handling** expanded its 8-Series small capacity diesel lift truck line with a new 3,000- to 6,500-pound capacity model powered by a clean-burning 1ZS engine. The engine achieves 25 percent more fuel efficiency compared to previous models, and meets Environmental Protection Agency Tier 4-Final Diesel Engine Standards.

The **Auto-Hite** VERTI-LIFT Self-Leveling Cart automatically lowers and raises as materials are added or removed to keep them at an optimal ergonomic height. Multiple carts can be stacked, and also hook together to be towed, enabling one worker to move multiple carts throughout a facility.

The Vector 8600MT multi-temperature hybrid refrigeration unit from **Carrier Transicold** provides improved fuel economy, and greater refrigeration capacity than previous models. With the Vector 8600MT, one or two remote evaporators can be added to the host system, enabling up to three refrigerated compartments within a single trailer, each maintained at a different temperature set point.

**Lift-A-Loft Corporation's** ML26 aerial lift and Maintenance and Retrieval Cart provides workers with an alternative to climbing in high-density warehouse operations where storage space is maximized with multiple deep rack systems. The ML26 lifts the cart into and out of the rack structure for loading and unloading materials. The equipment also allows workers to safely clean up elevated jams and spilled product.

Portable electric jacks from **Whiting Corporation** can be used to lift objects weighing up to 25 tons. A single operator manning a portable station simultaneously operates multiple jacks, which can be equipped with a variety of special lifting brackets to suit specialized tasks, including lifting rail cars, diesel engines, and generators. Each jack weighs about 3,000 pounds and lifts to a height of six feet.

## //Technology//

Logistics IT provider **Orchestro's** *Orchestro-to-Go* iPad app gives real-time visibility to consumer packaged goods manufacturers' field teams. The app allows users to chart store visits to assess issues and potential gains, understand product sales by category, detect store trends and compare with historical benchmarks, and avoid stockouts.

**Trincon Group** updated its *TruCosting* software package, a cost-modeling application that integrates a fleet's operating and financial systems to enable accurate operational cost projections and load pricing. The updates allow fleet managers to choose Software-as-a-Service or in-house hosting, and use business intelligence applications for profitable lane identification, performance-based KPIs, and expanded pricing capabilities.

Materials handling technology provider **The Raymond Corporation** launched two new *iWAREHOUSE* solutions. *iWAREHOUSE Essential* provides warehouses with access control, and collects lift truck and operator data in real time, allowing warehouse managers to increase assets and labor visibility.


Supply chain management provider **SDV** began construction of a new warehouse in Dubai. The 54,000-square-foot facility will provide durable spare parts management solutions and after-sales services to the aviation industry. The facility will open in the second quarter of 2014.

*iWAREHOUSE Enterprise* compiles collected asset and labor information into actionable data that helps users identify fleet and warehouse optimization opportunities.

*QMS Lite,* an addition to the *Catapult QMS* quotation management system from **Catapult International**, allows shippers to book transportation, obtain cargo insurance, retrieve rates, and check transit times online.

Freight-matching website **uShip** introduced a new less-than-truckload spot-rate marketplace featuring 16 asset-based LTL carriers. Shippers can use the service to get instant spot quotes, evaluate carriers based on a five-star scale, take advantage of posted instant prices, and get access to multiple carriers.

**GE Transportation's** *OASIS System* can be used in intermodal rail terminals to manage, plan, and optimize operations. The software allows operators to streamline yard and gate efficiency with a driver mobile app and automated check-in screen, reduce operating costs by recommending fuel-efficient methods of stacking, and boost throughput to handle increased capacity.

**Epicor Software Corporation**, a provider of business software for manufacturing, distribution, and retail, released version 8.7.7 of its wholesale distribution ERP solution, *Epicor Eclipse*. Updates include small project job enhancements, lien tracking improvements, and customer-owned inventory tracking.

An updated version of **Railinc's** *Car Hire Rate Negotiation Self-Service* app helps railroads, car owners,


**Qatar Airways Cargo** launched two new premium services to optimize transportation of time- and temperature-sensitive goods. Q Pharma, an airfreight service for pharmaceutical and healthcare products, provides temperature-controlled containers that maintain a constant temperature throughout the entire transportation chain. Q Fresh provides a dedicated team to actively ensure the correct temperatures for perishable goods.

and third-party leasing companies query, view, and manage car hire rate data. The app features a bid-and-offer dashboard that reduces the administrative effort required for car hire rate negotiations, and more easily matches users with available railcars.

Supply chain management company **CEVA Logistics** launched a mobile solution based on the *CEVA Matrix* transportation management solution (TMS). *Mobility Suite* enhances the TMS' capabilities with features including GPS shipment tracking, planning and dispatching, real-time driver visibility, and fleet and asset management.


**Streamline** released an update to its logistics and supply chain ERP application, *Streamline Shipping*. The update features enhanced online training; support for 8,000 global ports and locations; support for standardized industry equipment, including containers, trailers, and railcars; and multi-leg, less-than-containerload, and less-than-truckload support for multimodal shipments.

## //Transportation//

Ocean freight forwarder and consolidator **Dependable Global Express (DGX)** added new service offerings to South America. DGX now offers bi-weekly less-than-containerload (LCL) service from Los Angeles to Buenaventura, Colombia, as well as a weekly direct LCL service to Guatemala City, Guatemala.

**Materials handling company Crown Equipment Corporation's ST 3000-25 Series 2,500-pound-capacity straddle stacker is designed to operate in tight spaces, including retail environments, small loading docks, and narrow-aisle warehouses and distribution centers.**

**Famous Pacific Shipping** began a new less-than-containerload service between northern Europe and Fiji. The weekly sailings between Rotterdam, Netherlands, and Suva, Fiji, have a transit time of 36 days.

Danish transportation provider **DSV** added an intermodal option between Turkey and the United Kingdom. The service leaves three times weekly by rail from Istanbul to Zeebrugge or Rotterdam, or by short-sea services from Istanbul to Trieste, Italy, then by rail to Zeebrugge or Rotterdam, depending on the final destination.

**American Airlines Cargo** now offers widebody cargo service from Miami to Milan; and Miami to Curitiba and Porto Alegre, Brazil; and narrow-body service from Dallas/Fort Worth to Bogota, Colombia. The new routes primarily serve the automotive, fashion, and perishables industries.

Maersk Line formed a regional, containerized shipping company for the intra-Americas market. **SeaLand** will begin operations on Jan. 1, 2015, and will serve North, South, and Central America, as well as the Caribbean.

**Menlo Worldwide Logistics,** the third-party logistics arm of Con-way Inc., opened a 102,231-square-foot warehouse in Selangor, Malaysia. The multi-user facility offers inventory management and storage, order processing and fulfillment, returns management, kitting and packing, and distribution.

Refrigerated intermodal transporter **Tiger Cool Express** acquired 200 refrigerated containers to provide nationwide temperature-controlled transportation services. The startup began offering door-to-door transportation of refrigerated goods in February 2014.

Non-vessel-operating common carrier (NVOCC) **CaroTrans** partnered with South Korean NVOCC **Molax Line** to offer new transport options for shippers moving cargo between the United States and northern Asia. The combined service network includes direct export services from Los Angeles and San Francisco; Seattle; Chicago; New York; and Charleston, S.C.; to Busan, South Korea. Forwarding from Busan extends service coverage to North China, western Japan, and Vladivostok, Russia.


**Crowley Maritime Corporation's** Caribbean logistics unit reclassified its Puerto Rico warehousing and distribution center as a Foreign Trade Zone (FTZ), allowing the facility to receive, store, and process cargo without being subject to U.S. Customs entry procedures and duties. Additionally, cargo can now remain in the FTZ indefinitely, compared to the previous 14-day deadline associated with bonded cargo.

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www.rila.org/supplychain
703-841-2300
**PLANNER PROFILE:** none

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www.supplychainusaexpo.com
203-840-5492
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### Expedited Ground

**Norco Delivery Services** pg. 269
www.norcodelivery.com
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www.regions.com/transportation
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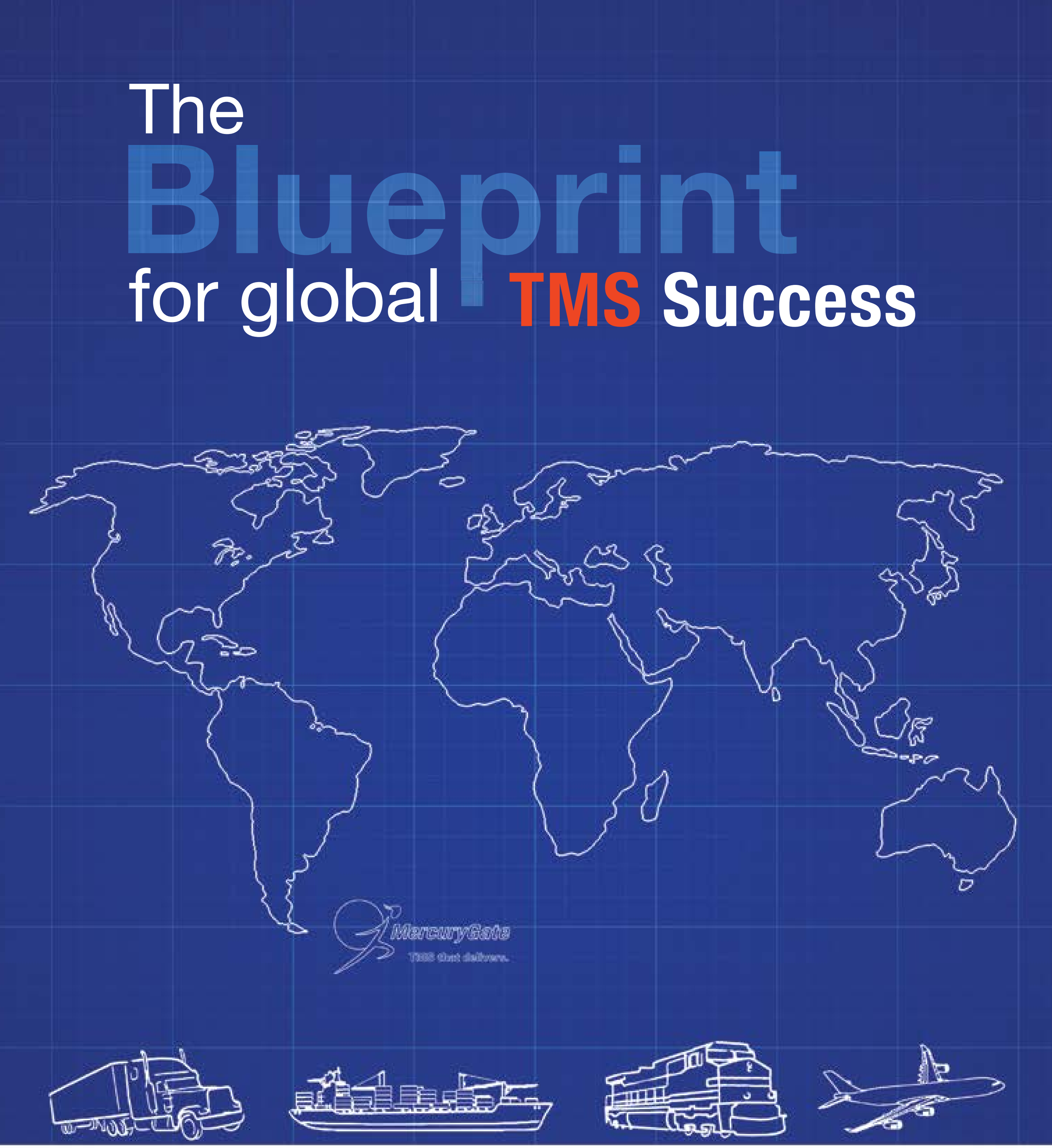
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