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19 STEPS TO A *lean & green* SUPPLY CHAIN

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*World Shipping Council - Survey Results for Containers Lost at Sea - 2014 Update.

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info snacks

BITE SIZED SUPPLY CHAIN/LOGISTICS INFORMATION

10.3%

That's how much higher the average salaries are for supply chain professionals earning certification than for those without certification, according to ISM's 2017 Salary Survey. *(See Become a Supply Chain Leader... in Your Pajamas, p. 86)*



Horse Sense

"I get up every day at dawn to ride my horse before work," says Rebecca Polan, CEO of REO Logistics. The ride feeds her competitive spirit and perfectionist impulses, which buffers employees from her need for perfection all the time. *(See LeaderShip, p. 20)*



Avoid Death By Audit

Focusing on sustainability compliance through supplier audits might be a roadblock to generating value and maximizing the benefits of a green supply chain. For coffee company Keurig, just complying with standards isn't enough to secure the coffee it needs to grow as a business. Instead, the company gets in the trenches with suppliers, and works to address water and farm management, and other complex issues.

(See 19 Steps for a Lean and Green Supply Chain, p. 42)

When is a 3PL not a 3PL?

When it is a true business partner rather than just another vendor. Your 3PL should be able to scale operations to meet your growing needs and demand peaks. Your partner also should understand your business, anticipate your needs in advance, and make recommendations.

(See 10 Tips, p. 16)

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ONLINE COMMENTARY



Supply Chain System Security Starts in the Cloud bit.ly/SC_Cloud

Hackers can shut down entire organizations by infiltrating systems, locking down digital assets, and making all files and folders inaccessible. Here's how a cloud environment can keep your supply chain safe.



Who are the Top CEOs in Transportation and Warehousing? bit.ly/Top_CEOs

CEO likeability has become crucial in today's era of transparency. A new study parsed thousands of reviews, and ranks these top executives as the most likeable in transportation and warehousing. Did your CEO make the list?



Asia Pacific Drives the Life Sciences and Healthcare Supply Chain bit.ly/AsiaPacificSC

What's motivating the world's life sciences and healthcare companies to establish and expand their supply chains in this geographical region?

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TRUCKING RESOURCES

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Trucking Request for Proposal bit.ly/ILTruckingRFP

Looking for the perfect motor carrier can be an indomitable challenge. Use this Trucking RFP/RFI to simplify the task of creating a database of likely partners, building your knowledge base, and preparing your transportation Request for Proposal list.

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HOW DSC LOGISTICS IS COMBINING SUSTAINABILITY AND COST EFFECTIVENESS TO ACHIEVE CUSTOMERS' GOALS

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Through network modeling and analysis, we help our customers find the most efficient and cost effective network design.

As for finding ways to reduce usage of water, electricity, and other items – our Green Team develops sustainability solutions and assesses them for both effectiveness and cost. We implement several large-scale projects every year related to building and operations. We track performance on key metrics. For example, we've been able to cut our use of water, network-wide by 13.8% over the past decade. Our electricity use continues to go down – and we're now recycling 67% of products that can be recycled.

We're reducing our impact on the environment and helping our customers reduce theirs.



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CHECKING IN

Keith Biondo

by Keith Biondo | **Publisher**



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Good Question...

READERS WEIGH IN

Will self-driving trucks affect the supply chain in the next two years?

Regulation will slow this for some time. People still need to get comfortable with the broader application of self-driving cars. In the next two years, drivers will be doing more than driving the truck. They will be doing more planning of their runs and solving problems.

Al Toliver
Chief Logistics Officer
Redwood Logistics

The next two years will be full of pilots and proof-of-concepts, and then BOOM, we are going to get hit with implemented interstate autonomous trucking and blockchain technologies by a select few leading-edge shippers, carriers, and brokers. Don't be surprised if 99 percent of the market is not ready. It is going to be the most disruptive event since deregulation in 1980.

Geoff Milsom
Director, Transportation
enVista

Driverless trucks have impacted our business from a software requirements perspective, but I don't expect to see fleets of autonomous vehicles on the road in two years. As driver assistance systems progress, efficiencies and service improvements will occur.

Gregg Lanyard
Director, Product Management
Manhattan Associates



No. I do not believe this is a viable option in the United States. Current research is specific for the European theater on confined and controlled highway systems. The United States will require significant highway infrastructure investment to facilitate self-driving trucks.

Bill Carter
Vice President of Logistics, CFI

Yes. There's an enormous driver shortage plaguing the industry and it's only getting worse. Retrofitting self-driving technology on current fleets can help alleviate many of the stresses drivers currently face and can help bring more drivers into the fold by making their lives on the road more enjoyable and less issue inducing.

Brendan Isaacson
Director of Operations, HaulHound



Home delivery may be a challenge since goods need to be offloaded and potentially installed/serviced; however, commercial delivery with driverless vehicles does represent a good concept for companies focused on safety.

Sergio Torres
VP Product Management
Descartes

We will see real, but limited, usage in the next two years. It will start with platooning on more wide-open interstates and in controlled environments like yards.

Tom Sanderson
CEO
Transplace

Yes. With automated vehicles comes an automation of the booking process, and therefore improved quality of data.

Dave Graham
Head of Business Partnerships
Gravity Supply Chain

HAVE A GREAT ANSWER TO A GOOD QUESTION?

Be sure to participate next month.

What's the most important question you should ask a potential 3PL partner?

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DIALOG

THE ONGOING CONVERSATION
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“We are now about to enter a new and exciting phase in ocean shipping empowered more by networks and greater interconnectivity. Data analytics will be an exciting part of this transformation.”

Inna Kuznetsova
COO and President, INTTRA

an ocean shipping electronic marketplace, which released a whitepaper on the accelerating pace of technology innovation.

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 **What movie title best describes your job?**

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Jose Manuel Sanchez

 **Routing Software Separates Losers from Weiners**
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Frank Manzardo

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 **Reader Email**
bit.ly/35yearmilestone

I read Felecia Stratton’s Checking In column (April 2017), celebrating her 35th anniversary as editor of *Inbound Logistics*. Well said on the changes. I remember my first encounter with a fax machine—amazing technology. As a driver, I would hang up the phone and wonder, “What if the dispatcher needs to change what he just told me to do?” We used to tell dispatchers where we were and provide a “call-back number” for the truckstop. There were constant intercom pages for drivers. I remember banks of pay phones, and some drivers had such long hold times that they would dial their dispatch, and drop the receiver, occasionally returning to pick it up and hear, “You are number 17 and have about 35 minutes hold time...” Then came nationwide pagers—amazing. Two-way pagers—even better, like a mini-computer in your hands. Felecia, you covered a lot of ground with your column. Thank you and most of all, congratulations on the milestone! I can see there is more ahead.

Danny R. Schnautz
Clark Freight Lines



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10 TIPS

STEP-BY-STEP SOLUTIONS



Getting the Most From Your 3PL Provider

As the debate between globalization and regionalization continues, getting the most from your third-party logistics (3PL) provider is more important than ever. Businesses need to be agile and able to not only proactively respond to customers, but also adjust in response to any unanticipated business change.

While many 3PLs offer similar services and capabilities, companies choosing a partner have many differences to consider. Do you need a niche provider? Asset-based provider? A specific geographic reach?

As you evaluate your options, you can also consider these tips to help leverage your 3PL relationship, according to John Haber, founder and CEO of Spend Management Experts.

1 Set goals and KPIs. Both your business and your 3PL partner should understand the established goals and key performance indicators (KPIs) you use to measure performance.

2 Do your research. Make sure you know your 3PL's track record. Check references specifically relating to the services you're interested in contracting.

3 Know what you want. Before committing to a 3PL partner, create a checklist, understand your needs, and set goals.

4 Ensure your 3PL uses the latest technology. Make sure your 3PL partner is up to speed with technology. Are you able to integrate with its system? Does it provide real-time visibility and tracking? What kinds of security measures has the 3PL established?

5 Treat your 3PL as a business partner. Your 3PL is not just another vendor. A 3PL partner should be able to scale its operations to your growing needs as well as any spikes in demand. In addition, a 3PL partner should understand your business, and be able to anticipate needs in advance as well as make recommendations.

6 Know the financial status. Imagine if your 3PL partner suddenly shut down and left your operations at a standstill. Also, be wary of 3PLs that have a large concentration of business with a small number of customers.

7 Make certain the 3PL meets your needs. A 3PL should be able to provide multiple modes of transportation such as truckload, less-than-truckload, intermodal, rail, and air, as well as warehousing services and support. Your 3PL partner should be able to recommend the best options based on your needs, and provide shipment analytics and reporting.

8 Plan for new markets. Can your 3PL support you as you expand into new geographic regions and/or new services? Make sure you understand not only its capabilities, but also its capabilities by geography.

9 Incentivize performance. It's important not only to establish realistic KPIs, but also to hold regular meetings with your 3PL, and offer rewards for good performance.

10 Consider future acquisitions. The 3PL market has been consolidating in recent years. Consider the market while conducting your research and what a possible merger could mean if your 3PL is acquired. ■

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Paul Nugent is director of logistics for Kitchen and Bath Americas with Kohler Co. While Kohler is best known for plumbing products, the company also manufactures furniture, cabinetry, tile, engines, and generators.

RESPONSIBILITIES

Create and execute distribution and fulfillment operational strategies for manufacturing plant warehouses, logistics centers, and customers. Also responsible for operations, network design, and transportation planning.

EXPERIENCE

Director of Operations with Exel (DHL Supply Chain); senior vice president, head of Malaysia, IDS Logistics; various operations management roles with UPS.

EDUCATION

MBA, Ohio Dominican University, 2007; B.A., English, with Honors, with Distinction, magna cum laude, Ohio State University, 1996.

Paul Nugent: Feed the Flow

KOHLER KITCHEN AND BATH IS A DYNAMIC BUSINESS: Every day we ship thousands of orders via all modes domestically and globally. Our distribution network in Mexico, Canada, and the United States is growing as we seek to get closer to our customers.

Most of our network runs on a legacy warehouse management system (WMS). In 2016, we went live with the first location of JDA's Tier 1 WMS. We will deploy more sites this year.

To optimize the rollout, we redesigned the warehouse by standardizing sight lines and aisle widths for a safer, cleaner environment. We added several hours to our cutoff times, because we have more visibility and flexibility into the system and can prioritize work. Automation and associated visibility tools let us limit bottlenecks and more efficiently move associates.

We've spent a lot of time on change management. We held roundtable discussions with associates and key leaders. A few growing pains at the

beginning taught us the value of patience and resolve. I'm proud of my team and our partners. We continue to optimize as we get ready for our second implementation.

Long term, we'll transform our entire network with a paperless work environment. We're also deploying a more robust infrastructure that includes pick modules, and automated sortation and retrieval systems.

I earned an undergraduate English degree at Ohio State and thought I'd end up an English professor. During school, I ran Boss Doggs, a concession company on campus. UPS asked if they could brand our napkins, so students would see information about employment opportunities. That was

The Big Questions

What author has had a big impact on you?

I love to read; my English degree never left me. One favorite author is Neal Stephenson. He has written fascinating books about what our future might look like.

Describe an ideal day off.

I would play some Destiny on PS4. I might take the family to a

museum, ideally one with a Mayan art collection. I also love the Field Museum in Chicago. There's always something new to see.

If you could have dinner with anyone alive or from history, who would you choose?

Thomas Jefferson or Michelangelo. Each had a vision and was able to execute it.

my entry into the supply chain world.

I went to work for UPS loading package cars, just to earn the benefits. I loved it despite the 4 a.m. start time. It was fast-paced, physical, and urgent. This was before UPS was automated, so we had to memorize ZIP codes, sortation lanes, and in what order to load the package cars. I embraced that challenge.

Within a few months, UPS asked me to join its management team. I worked every position in the hub and enjoyed them all. Every day was a new day.

After several years, a mentor of mine left UPS and joined Exel (DHL Supply Chain). I followed him and learned about third-party logistics and warehousing.

I left DHL and spent one year in Malaysia, where I was responsible for in-country logistics for IDS (now a part of Li and Fung). Most people were multilingual, but I spent the first 30 days talking too fast. A teammate finally told me, "People are just nodding. You've got to be deliberate, concise, and

clear because English is not their first language." The experience was an eye-opener, remarkable and humbling.

After that, I wanted a chance to work upstream in supply chain. Coming to a leading manufacturer and strong brand like Kohler provides visibility into new concepts and experiences.

I enjoy learning to understand the broader supply chain, and realize the importance of my team. I'm blessed to work with so many bright, talented people who want to win every day. ■

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LEADERSHIP

*Conversations With
The Captains of Industry*

By Merrill Douglas

Rebecca Polan
CEO, REO Logistics

In Line to Succeed

REBECCA POLAN WAS WORKING toward a career in the not-for-profit world when she realized she wasn't sure what she wanted to do with her life. Her father, Lake Polan, the third-generation leader of a family logistics and real estate firm, urged her to work for him for one year. "He said, 'No harm if you don't like it, you can always move on,'" Polan recalls. "That was 12 years ago. I've been here ever since."

Polan rose through the ranks at REO Logistics, spending most of her time in Huntington, West Virginia, in the corporate services business, which manages finance, human resources, information technology, and other shared functions for the company's many subsidiaries. After a while, her father started planning to have her succeed him.

"It was understood that if I wanted to pursue that, I needed to accomplish several things, such as earning my MBA and spending even more time in the operations part of the business," Polan says. She moved to Virginia in 2006 to get a close-up look at REO's trucking subsidiary there.

In 2011, Lake Polan named Rebecca Polan president of the corporate services company. In January 2017, she took over as chief executive officer of the entire corporation. Polan talked with *IL* and explained how she runs the company today.

***IL*: What crucial experiences shaped you as a leader?**

The period when I was making the transition from vice president to president of the corporate services business was key. I'm about to turn 40. It's sometimes hard to manage people who have 30-plus years more experience than you do. My father was tough on me and held me to high standards, but being the boss's daughter can be a challenge. I had to learn how to get people on my side and convince them that I could drive us onto a productive path.

During that time, I worked with my dad to implement quarterly strategy meetings, and we formed an executive team across the organization. We started to implement strategy sessions, so we could become more deliberate about the way we were growing. I think that solidified my place as a strong leader. Getting my MBA gave me a lot of new tools to work with. And then, over the past two years, I've been able to hire my own executive team. That has made a huge difference.

***IL*: What's your leadership style?**

I'm extremely collaborative. I avoid micromanaging at all costs, and I encourage our team to work together. You never know where you're going to get the next great idea. My IT director might be the person who solves a human resources problem, or my warehouse manager might come up with a technology solution for a challenge in the trucking company. We try to hire people with diverse backgrounds, so we can lean on everybody to be a holistic problem solver.

IL: As CEO, how do you spend a typical day on the job?

There is no such thing as a typical workday for me. One day I might be touring warehouses, helping to identify safety issues or ways to improve the flow of traffic. Another day, I might be in a brainstorming session, figuring out the best way to present new ideas to a customer.

I spend a lot of time traveling to conferences, bringing back new ideas. I see culture-building, and bringing the outside in, as one of my main responsibilities. Now that I've established my strong executive team, I'm starting to work on improving our middle management systems, identifying the top performers and mentoring them. That's one of my favorite things to do.

IL: What's currently at the top of your agenda?

We recently completed our second acquisition. I see that kind of growth as a huge part of our future, for growing geographically and expanding our service offerings. We're using this acquisition as a practice ground, and so far, so good.

We're also upgrading almost every technology system in the company. We've done our accounting system, and now we're working on our transportation management software. Next comes a new warehouse management system. Human capital is our most valuable asset, but that human capital needs great technology to function at its highest capacity.

IL: How do you stay in touch with what your customers want and need?

I read voraciously and attend a lot of industry conferences. I also work closely with a consultant who monitors new trends and technologies in our industry. We're members of the International Warehouse Logistics Association, and I am a member of the Young Presidents' Organization, which provides a lot of opportunity to understand what technologies are emerging in the supply chain world.

Of course, I try to stay up on world events and invite customers to talk to me about their perspectives and concerns. I rely on my vice presidents and salespeople to talk to customers on a more micro level. At our weekly meetings, we check in about our customers and find out what is worrying them, or I encourage people to find out if our customers are

worried about certain proposed laws and regulations. Then we use that information when we develop our strategies.

IL: Tell us about a mistake you've made that has taught you a valuable lesson.

Probably the biggest mistake I have made involved keeping someone in the wrong position for too long. I love the people who work for me, so it's hard when I realize that someone is not in the right spot. I usually try to find them something that's a better fit, and typically they're happier in the end, even if they move to a position with less responsibility. This doesn't get easier, and I don't want it to.

IL: What's the hardest part of your job?

It's balancing the resource needs of all the different companies. Each of them would like to spend the entire annual capital budget on its own needs.

IL: What's the most fun?

I love getting my main staff together in a room and saying, "This is a problem we have. How can we fix it?" It's like your favorite college seminar, where everybody is a good listener and willing to be changed by what other people are saying. I have great people who love to problem solve, and then make it happen. ■

Still in the Saddle

Before trucks took a place at the center of her life, Polan devoted herself to a slower form of transportation. After college, she spent more than four years working on a horse farm. "I was very focused on my riding career," she says. "I got to travel all over the country, living out every horse lover's dream—riding for a living and going to horse shows all the time."

Polan still competes as a rider. "I get up every day at 4:30 or 5 a.m., and ride my horse before work," she says. "That feeds my competitive spirit and my perfectionist impulses. I let those out a bit at the barn, which buffers my employees from my need for perfection all the time. It keeps me sane and gives me balance."

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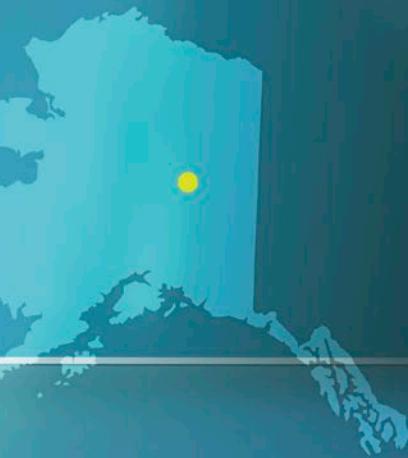
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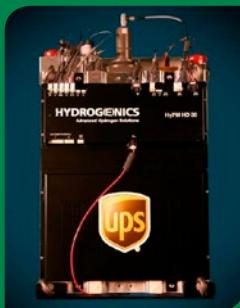
THE SUPPLY CHAIN IN BRIEF

GREEN SEEDS

▼ **Ryder System**, a commercial fleet management, transportation, and supply chain solutions provider, now offers renewable diesel (RD) fuel at its San Francisco fueling facility. Unlike biodiesel, RD undergoes a hydrotreating process instead of a transesterification process through which an ASTM D975-compliant diesel product is created. This implementation enables Ryder customers to reduce greenhouse gas emissions while utilizing diesel vehicles.



UPS is deploying a prototype extended-range Fuel Cell Electric Vehicle (FCEV) in its Rolling Laboratory fleet of alternative fuel and advanced technology vehicles. UPS is working with the U.S. Department of Energy and other partners to design a zero tailpipe emissions, Class 6 medium-duty delivery truck that meets the same route and range requirements of UPS's existing conventional fuel vehicles. Unlike fuel cell auxiliary power units, this vehicle will use an onboard fuel cell to generate electricity to propel the vehicle. This project aims to demonstrate the commercial viability of zero tailpipe emissions trucks and the developing FCEV supply chain.



m&a

Software-as-a-Service solutions provider **Descartes Systems Group** acquired **ShipRush**, a provider of e-commerce multi-carrier parcel shipping solutions for small to mid-sized businesses. The ShipRush platform lets shippers automatically import orders, compare carrier rates, print shipping labels for all major carriers, and track shipments through final delivery. Descartes will integrate the platform into its Global Logistics Network, increasing its parcel shipping solutions for omni-channel retail and small business customers.

Polaris Transportation Group acquired **J.G. Drapeau and Commercial Warehousing Limited** based in Toronto, Ontario. The deal brings J.G. Drapeau's expertise in specialized products warehousing, Canada and U.S. distribution programs, and full truckload work (temperature control and hazardous materials) to Polaris. This acquisition allows Polaris to increase its concentration of Fortune 500 customers, across more industries.



UP THE CHAIN

Yone Dewberry was promoted to chief supply chain officer at agribusiness and food company **Land O'Lakes**. Dewberry assumes responsibility for overall supply chain operations across the enterprise. His promotion is part of the company's plans to evolve the structure of the supply chain to drive integration and expand its service portfolio.



GOOD WORKS

For the second year in a row, **Propak Logistics** participated in the Arkansas Children's Hospital's Festival of the Stars drive, which collects donations of toys, books, and needed supplies. In April 2017, Propak employees helped pack the donations and provided the transportation from the donation site to the hospital. The company generated more than \$44,000 in toys and \$31,000 in cash donations during the drive.

**SEALED DEALS**

▼ **Porsche Motorsports** signed a three-year logistics partnership agreement with global 3PL **Agility** for the seven-weekend Porsche Carrera Cup Deutschland (PCCD) racing series. Agility is responsible for improving visibility, shortening delivery times, cutting costs, managing supplier networks, and increasing efficiency. The 2017 PCCD series opened May 5-7, 2017, in Hockenheim, Germany, and features Porsche 911 GT3 Cup vehicles.



Hörmann, a European manufacturer of doors, frames, and operators, deployed a new SAP-based solution, **SAP LE-TRA**, to improve the processing of transport and shipping activities at three sites. Since the first quarter of 2017, the solution has planned and processed up to 1,600 trips with more than 15,000 deliveries. The system, implemented by logistics software specialist **inconso**, improves the transparency of all transportation activities, from packaging and shipping planning through invoicing.

recognition

▼ **Union Pacific** earned the **2016 Toyota Logistics Excellence Award in Customer Service** for the ninth consecutive year and, for the first time, the **Kaizen Excellence Award** recognizing excellence in continuous improvement. This is the first year Toyota honored a railroad with the Kaizen award, commending Union Pacific's use of Toyota's problem-solving process to ensure damage-free loading at the Benicia, California, auto ramp. Union Pacific ships Toyota vehicles and auto parts throughout North America.



AWESOME (Achieving Women's Excellence in Supply Chain Operations, Management and Education) presented the **AWESOME Legendary Leadership (ALL) Award** to two supply chain leaders: **Francesca DeBiase**, chief supply chain and sustainability officer, McDonald's Corporation; and **Kristin French**, retired brigadier general, U.S. Army, and principal deputy assistant secretary of defense (Logistics and Materiel Readiness), U.S. Department of Defense. DeBiase is responsible for overseeing the McDonald's global supply chain while promoting sustainability. French serves as a principal adviser to the undersecretary of defense for acquisition, technology, and logistics.

Domino's Pizza Enterprises awarded temperature-controlled warehousing and logistics provider **Americold** the **Business Partner of the Year - Supply Chain 2016 Award**. Americold services more than 50 percent of Domino's franchise locations, along with its corporate office, with everything from soap, soap dispensers, and paper products, to fresh ingredients and sauces. Americold's rebuyers work closely with Domino's procurement teams to maintain stock levels that ensure no out-of-stocks on perishable and dry products. Americold's delivery teams place stock in-situ on shelves directly in the restaurants, ready for immediate use.



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TRENDS

SHAPING THE FUTURE OF LOGISTICS



Intermodal Bounces Back in Q1

by Jason McDowell

Intermodal freight volumes returned to growth in the first quarter of 2017 following declines during 2016, according to the Intermodal Association of North America's (IANA) *Intermodal Market Trends and Statistics* report. International and domestic containers rose 2.9 percent and 1.3 percent respectively, and intermodal trailers posted minimal gains of 0.3 percent.

"All intermodal market segments showed improvement in the first quarter," says Joni Casey, president and CEO of IANA. "What's notable is that it comes on the heels of 2-percent growth in the same quarter of 2016, suggesting real gains, not just a weak comparison."

The seven highest-density trade corridors, accounting for 63.4 percent of total intermodal volume, collectively were up 2.1 percent in the quarter. Gains were varied, ranging from a 7.4-percent increase between Eastern and Western Canada, to a 1.3-percent loss

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in the South Central-Southwest corridor. The corridor with the highest volumes, the Midwest-Southwest, grew 1.7 percent.

Drilling down to international container growth, the top five corridors contributing to international volume gains were in the east to west lanes. Midwest-Southwest moves increased 19 percent, the highest share of international volume growth, followed by the Northeast-Midwest at 13 percent. The Eastbound Western Canada-Eastern Canada lane experienced 13-percent gains.

Intermodal marketing company (IMC) reporting offers a view of rail-hauled quarterly performance side by side with highway results. Participating IMCs showed gains of 7.5 percent in total quarterly loads, reflecting the continued strength of highway shipments. These increased 11.6 percent over the same quarter the previous year. Intermodal loads also gained 3.6 percent after a double-digit drop for the full 2016 year.

Maintaining the Bottom Line

Trucks need to keep rolling. Conveyor belts aren't much good if they don't convey anything. Cargo planes don't move freight if they can't fly. Ships don't deliver from under the water. Business logistics managers can't ignore the importance of preventive maintenance because the costs of reactive maintenance can have a heavy impact on the bottom line.

The transportation industry leads the way in preventive maintenance (see chart, page 29), with more than half of transportation respondents reporting 80 percent of maintenance tasks being preventive rather than reactive, according to the *State of CMMS Report 2017* from Maintenance Connection, a provider of Computerized Maintenance

Top 5 Things to Know About IoT

The Internet of Things is still in its infancy, and can be confusing to supply chain and logistics managers. Greg Braun, senior vice president of sales and marketing for Montreal-based logistics IT company C3 Solutions, shares some advice.

1. IoT technologies promise vastly improved visibility into supply chain operations. The ready availability of connected devices and things means that you can have visibility—and control—anytime and anywhere you need it. From the dock to the yard to last-mile delivery, with the right IoT tech, you can see it all.

2. IoT is not just for real-time operations. Tracking and visibility are on everyone's mind, but another big potential benefit of IoT-enabled supply chain operations is the ability to use the collected data for predictive analysis. If data from formerly siloed supply chain processes could be brought together through the magic of IoT technology, supply chain

optimization may be within reach.

3. If you implement IoT to track your supply chain operations, be prepared for the flood of data. Before it inundates you plan how you will store and use the data you collect to benchmark and improve operational metrics. There is vast potential here, but only if you know where to look.

4. Don't overlook security concerns. If you contemplate using connected devices, security needs to be as important as the application that uses the data they collect. As quickly as apps are developed, someone is trying to compromise them. IoT security needs to be a top-level concern for companies planning to use it.

5. There is both potential and peril in the future of IoT technology. Estimates have it about 10 years away from maturity, meaning managers should approach with caution. Early adoption will have its benefits, but it won't come without some risk.

Management Systems (CMMS) and other maintenance software solutions. The report surveyed 1,000 maintenance professionals across 10 major industries—including transportation and manufacturing—to see how they rate their maintenance programs.

Seventy-three percent of all respondents that have a preventive maintenance ratio of 50 percent or higher report cost savings ranging from tens of thousands to millions of dollars. Those statistics become more impressive for transportation because these companies tend to run smaller maintenance teams, with 50 percent of organizations reporting teams of fewer than 15 people.

Transportation companies do lag in

a few areas, however. The report shows the industry lacking in mobile CMMS deployments, reporting capabilities, and number of personnel trained and using the software. Improvement in those areas could reap even greater positive benefits on the bottom line.

Manufacturing also held a couple of notable top spots among CMMS users. The report ranks maintenance programs at five levels—apprentice, mover, journeyman, leader, and master. Forty-nine percent of manufacturing organizations report programs at the leader or master level. With 96 percent of master-level programs reporting measurable and significant cost savings from their CMMS implementation, the impact of maintenance programs on manufacturing's

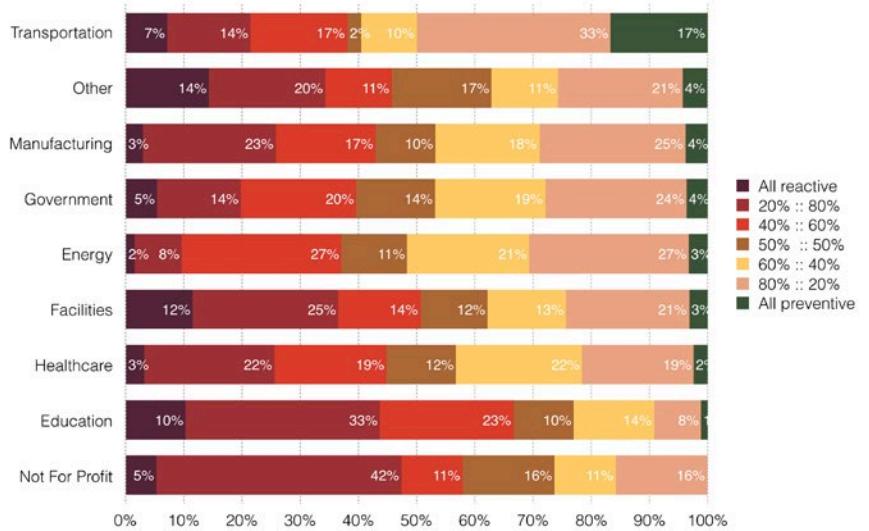
bottom line appears to be overwhelmingly positive.

More than 75 percent of manufacturers also report their CMMS gives them a return on investment ranging from tens of thousands to millions of dollars.

Also of note for transportation and manufacturing, 78 percent of organizations that configure most assets in their CMMS report strong improvements to equipment life span, and 67 percent of facilities that have most spare parts inventory managed in their CMMS report strong improvements to parts availability and time to fix.

Considering longer equipment life and better inventory management can be important cost motivators for transportation, logistics, and manufacturing organizations, improvements in these areas may be worth exploring.

Ratio of Preventive vs Reactive Maintenance



SOURCE: State of CMMS Report 2017, Maintenance Connection

Organizations in any industry that perform more preventive maintenance than reactive or corrective maintenance realize a stronger return on their CMMS investment.

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GLOBAL

THE WORLD AT A GLANCE

by Jason McDowell



President Trump's Trade Policy To-Do List: Top 10 Priorities

President Donald Trump's early days in office have been busy ones for trade policy. It is too early, however, to assess the impact of these changes, according to global trade data company Panjiva.

Here's how Panjiva prioritizes the President's trade policy task list.

1. Light up Lighthizer. Senate approval for Robert Lighthizer's appointment as U.S. Trade Representative has been delayed, as his prior lobbying work for the Brazilian government necessitates a waiver. The White House indicates that a plan to renegotiate NAFTA cannot be completed until he has been approved.

2. Get going with NAFTA (or not). A key commitment of the Trump administration has been a review of the

North American Free Trade Agreement with Canada and Mexico. Mexico has already launched its own pre-negotiation consultative process, but has been frustrated by the United States' slow progress—under Trade Promotion Authority rules, the process requires a 90-day consultation with Congress.

An added complication: Canada and Mexico want to hold trilateral talks, which could further protract the process.

3. Challenge WTO legitimacy. A World Trade Organization (WTO) dispute panel found that the United States must reduce its tariffs on South Korean domestic washing machine imports. That follows a ruling that the United States did not correctly use “zeroing” methodologies in a case originally

decided in 2013 that South Korea later appealed. Imports from South Korea were 74.7 percent lower in the past 12 months than they were four years ago, according to Panjiva data.

There's an obvious clash between the WTO's requirement to change tariffs, and a commitment in the President's trade agenda that suggests WTO rulings might not be considered binding. As a candidate, Trump threatened to withdraw from the WTO, but has not subsequently confirmed that decision.

4. Jump on the Omnibus. President Trump signed an executive order in March 2017 calling for an “omnibus report” to identify the drivers behind the U.S. trade deficit. The report is to include an assessment of tariff and

non-tariff practices for each major U.S. trading partner with a “significant” trade surplus in goods. The report will form the basis of the administration’s engagement with its trading partners in the coming year.

5. Deliver the 100-day plan with China. Meetings between President Xi and President Trump in April focused on relationship building and included a commitment to a 100-day program to improve the trade balance between the two countries. Before the meeting, the Chinese government expressed willingness to increase exports in exchange for a review of American intellectual property export rules.

Aside from the deficit reduction potential, a short-term deal with China may help President Trump’s foreign policy objectives, Panjiva notes.

6. Pour something concrete with Japan. Initial economic dialog meetings between Vice President Mike Pence and Deputy PM Taro Aso led to a commitment to achieve “concrete results” in the coming months.

It isn’t clear where the impetus will come from. Japan is engaged in significant trade negotiations in Asia and Europe, while the United States has not labeled Japan as a currency manipulator and might wait for the Omnibus report before acting.

One area for action may be foreign direct investment; a second could be export preferences. Panjiva’s analysis of the top 1,000 export lines from the United States to Japan and globally shows opportunities in energy, autos, electronic components, and jewelry. These products are under-represented in U.S. exports to Japan versus its global shipments, with the top 10 items alone potentially adding 11.6 percent to U.S. shipments to Japan, notes Panjiva.

This will show whether the President’s strategy of delegating different parts

of trade policy execution to Pence, Commerce Secretary Wilbur Ross, and trade representative nominee Lighthizer will work. Success matters, as the President wants to pursue several multilateral deals at once.

7. Get to know India. The Indian and U.S. governments have yet to hold high-level ministerial meetings relating to trade. A call between President Trump and Prime Minister Modi in January focused on security, CNBC reports.



India had a \$24.4-billion goods surplus vs. the United States in 2016, shows a Panjiva analysis of U.S. imports and exports. India has also seen significant trade growth, with U.S. exports climbing 25.8 percent and Indian exports just 10.7 percent.

From a political perspective, India is part of the negotiations regarding the Regional Comprehensive Economic Partnership trade deal with China.

8. Respond to Pacific Rim deal making. The Trump administration’s trade doctrine is firmly committed to bilateral trade negotiations. Yet, many ongoing multilateral deals, particularly

in Asia, may limit America’s freedom to negotiate in the coming months.

Those deals may take precedence in the relevant countries’ negotiation and political passage processes. Furthermore, countries may not want to offer the United States terms that are “better” than they are negotiating in their trade deals for fear of jeopardizing them.

Of the 25 largest trade in goods surplus countries with the United States, only Russia, Switzerland, and Israel are not currently involved in trade negotiations in the Pacific Rim, according to Panjiva.

9. Swing the BAT or dodge the ball. A critical part of the Trump administration’s economic policy is “pro-growth” tax reform. The Republicans’ outline proposals include a border-adjustable tax (BAT), *The Wall Street Journal* reports. This would not allow companies to deduct the cost of imported goods for tax purposes, but would not require them to pay tax on revenues earned on exports.

For industries that share common overseas production business practices, the most likely outcome would be a rise in consumer prices. Where there is differentiation, companies may choose to withdraw from the market, as Uniqlo has threatened, or result in a combination

of higher prices, lower profits, and less investment as Volvo, General Motors, and HP indicated. BAT implementation will depend on broader tax reform.

10. Open-and-shut cases. The U.S. International Trade Commission currently has 49 anti-dumping/countervailing duty trade cases in progress, including seven petitions launched since the start of the Trump administration. This is likely to increase once the Omnibus trade report is completed, and does not account for the recent presidential memorandum covering the steel industry.

These cases represent the nuts and

bolts of implementing trade policy, with imports of the affected products often dropping immediately after a case is launched.

Particular focus is on the steel industry, where Panjiva data shows U.S. imports in the three months to Feb. 28, 2017 increased 19.7 percent from one year earlier, led by an expansion in shipments from Russia and Brazil, among others.

When will it happen? More or less continuously for ongoing cases, which need to complete a one-year process from petition (or self-initiation) to reviews by the International Trade Commission, International Trade Administration, and potentially the Court of International Trade under Commerce Department auspices.

Supply Chain Visibility: Closer Than You Think

Running a sustainable company isn't as simple as it looks. "Compliance and recycle/reuse is about knowing what's in your product—materials, chemicals, substances," says Christoph Wilfert, CEO of London-based everycs, developer of a technology solution—currently in beta testing—that screens global supply chains for risks and impacts.

"But suppliers, like chemical companies, hate formula or percentage composition disclosures, and rightfully so, because it's their intellectual property," Wilfert says. "It's like asking Coke to disclose their formula; it's a non-starter. The whole disclosure-based compliance process is bound to be inefficient from the get-go."

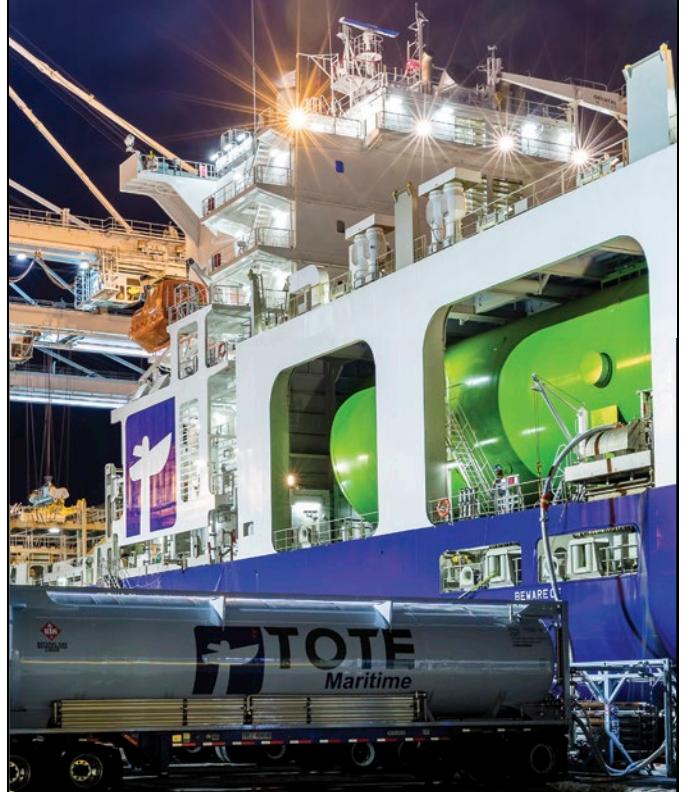
Shippers and manufacturers searching for ways to achieve more ethical supply chain practices may soon gain the ability to access data that hasn't been available previously, thanks to the everycs solution and the similar technologies that will undoubtedly follow.

"Combined risk, hazard, and environmental data is a breakthrough," Wilfert notes. "First, because it simplifies the process and makes it a lot cheaper. Second, because to date there hasn't been the technical platform to do it all together while protecting intellectual property rights."

Currently, 50 percent of manufacturers don't have any visibility beyond their Tier 1 suppliers, according to a KPMG study. By modeling thousands of connected supply chains, the new software concept should be able to trace components and materials without forcing suppliers to cough up data they'd rather keep private. ■

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Handle With Care: How to Be the Best At Fulfilling Your Clients' Chemical Handling Needs

Chemical handling is an important function of a third-party logistics provider. If your firm is looking to source a chemical handling partner or currently handles chemicals and wants to perform better, our guide below illuminates some key factors to finding the best fit.

1. Explain your chemical business thoroughly, so potential providers know their duties. Allow your incumbent provider and any potential providers in the RFP process to learn as much as they can about your business. A potential provider should demonstrate intimate, near-encyclopedic knowledge of your business, operations, and current and future needs. Be sure to communicate must-do, regularly repeating tasks, current and past lean projects (so the potential providers know about any past inefficiencies and challenges), and a list of future goals. A strong provider should be able to explicitly address how it will be able to resolve challenges and improve your organization's processes.

Be on the lookout for the kind of top-performing provider that combines integrated teamwork, commitment to delivering absolute reliability to your business, and dedication to going beyond the normal scope of work to best serve the client.

2. Make sure your provider considers or complies with industry partnerships/memberships: Responsible Care and Operation Clean Sweep. Responsible Care is the global chemical handling industry's premier environmental and safety initiative, holding many organizations, companies, and non-profits accountable for safe and responsible chemical handling. American Chemistry Council companies are strongly encouraged to participate in Responsible Care initiatives for responsible chemicals handling.

However, for companies like 3PLs, participation in Responsible Care is strictly voluntary. Becoming a Responsible Care Partner entails adhering to Responsible Care commitments to improve performance in the fields of environmental protection, occupational safety and health protection, plant safety, product stewardship and logistics, as well as to continuously improve dialog with neighbors and the public, independent from legal requirements. The initiative is global and currently active in 52 countries. Responsible Care is not simply marketing or symbolic.

Joining the Responsible Care initiative as a Partner involves taking a leadership role with chemical manufacturers and distributors to ensure products are handled safely and in sustainable, environmentally friendly ways. If your poten-

tial chemical handling provider is committed to safety and health, as well as efficient and sound logistics, it will commit to Responsible Care Partner designation.

Similarly, Operation Clean Sweep, a product stewardship program of the American Chemistry Council's Plastics Division and Plastics Industry Association (PLASTICS), helps to strengthen your provider's commitment to sustainability. Operation Clean Sweep's goal is to help every plastic resin handling operation implement good housekeeping, including pellet, flake and powder containment practices. The ultimate goal of OCS is to achieve zero pellet, flake or powder loss. Should your organization handle plastics, your provider's participation in—or compliance with—Operation Clean Sweep standards is paramount for good housekeeping, safety and health.

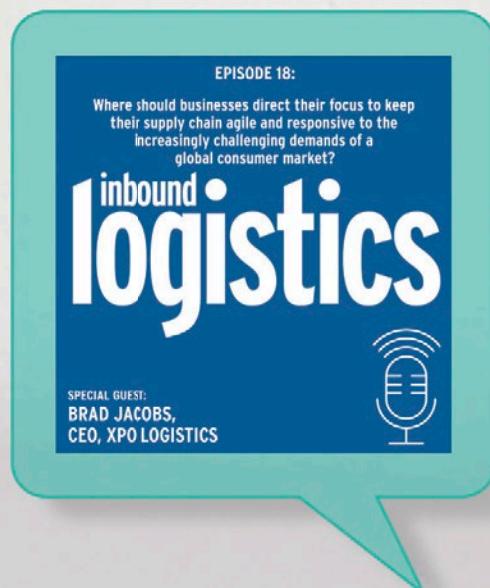
3. You get what you pay for; beware of the "too-good-to-be-true" price. After providing your thorough and complete scope of work to the provider, getting to know its labor force and capabilities, and ensuring the provider has all necessary partnerships in place, the final and most important step is to ensure your price expectations are aligned with the provider.

It is essential to consider what you know about your company's current operations. Are you certain the account will require after-hours receiving and shipments? Expect to be charged accordingly, and trust that your provider will spell out its justification for pricing to the utmost degree in its RFP response.

If a potential provider responds with a lowball pricing offer, be sure to consider your incumbent provider's strengths and consider the value of their work, including future proposed projects and past performance. A potential low-cost provider that does not know your business well may fail dramatically at delivering high-performance chemical handling. The lowball offer may overlook essential elements of your business, such as the need for same-day bulk transfers or for frequent re-labeling. Accepting a low-cost offer from a provider that is not prepared to take on the workload could end up costing your company more in the long run.

Using these three strategies, your company can gain the knowledge needed to find an expert provider in the chemical handling industry. WSI, one of the nation's largest 3PLs, has been handling chemicals for decades. We are a current Responsible Care Partner and Operation Clean Sweep participant, handling chemicals for some of the largest distributors and manufacturers in the world.

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THOUGHT LEADERS

U.S./Canada Trade Remains Strong, With Plenty of Opportunity for Growth

Q: What trends are you seeing in U.S./Canada cross-border trade?

A: I see tremendous opportunity on both sides of the border. For one thing, imports from Canada are growing, largely due to the stable U.S. dollar. We seem to have turned the tide on the currency volatility of the past couple years, allowing Canadian manufacturers to again look to the United States as a stable source of profit and growth. Among U.S. businesses, confidence is at an eight-year high, as evidenced by investments in manufacturing and hiring.

On the regulatory front, the two countries have made progress in eliminating many of the bottlenecks and redundancies that have jammed the customs process. The joint Single Window Initiative is a great example of the enhanced cooperation. While some degree of NAFTA recalibration does appear likely, I have to believe there will be minimal effect overall on U.S./Canada trade. With more than \$1.5 billion in goods crossing the border each day, I am very bullish on trade opportunities.

Q: What about the potential for U.S. retailers to tap into the Canadian e-commerce market?

A: Canadian e-commerce is growing at a double-digit pace, with Amazon, Apple, and eBay leading the way. Similar to U.S. consumers, Canadians turn to e-commerce for value and selection. And since, until recently, Canadian retailers were behind in meeting those needs, consumers have looked to U.S. retailers, with more than 9 million Canadians purchasing from U.S. sites last year.

However, U.S. businesses must go the extra mile to ensure “Amazon-like” flexibility and delivery guarantees. This means making sure your transportation provider understands the nuances of the Canadian market and factoring their unique end delivery options for consumers. Among other things, consumers highly prefer to receive shipments with all duties and taxes paid. A logistics partner must be able to access all of Canada and meet strict transit time requirements, and, of course, process returns. Canadian consumers have a strong affinity for U.S. brands, and when handled correctly, e-commerce can be a great opportunity for U.S. retailers.

Q: What about trends here in the United States?

A: Technology has changed everything, and today it is possible to achieve transportation efficiencies that were unthinkable just a few years ago. Amazon was among the first to recognize the power of logistics innovation, and today its “free” 2-day delivery model has reverberated across all supply chains—B2B and B2C—as businesses adapt to changing customer expectations.

One of the biggest changes has been the emergence of expedited services as a “normal” logistics solution, rather than an option reserved only for the most fragile or most critical shipments. Expedited service, with its premium level of customer service and delivery guarantees, has become the preferred option for many businesses unwilling to risk a late or damaged delivery. And, as U.S. manufacturers continue to invest in technology-driven automation, expedited service is the logical choice for ensuring fast, flawless service.

Looking ahead, we’ll see demand for even more innovative options, including evening and Sunday deliveries, with increased focus on last-mile attention to detail. Delivery flexibility and service have become integral parts of the customer experience, and businesses will increasingly turn to their logistics provider for the “next big thing” in helping to differentiate themselves. I also expect to see more focus on inventory efficiencies and distribution center location.

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[E-COMMERCE]

BY KEN CHRISMAN

President, Product Care Division, Sealed Air Corporation
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Thinking Inside the Unbox

Consumers today judge businesses on many things beyond product performance. Unboxing, for example, is now part of a consumer's everyday experience. That means daily opportunities for your brand to make a positive impression.

Today, 68 percent of shoppers say they are more aware of packaging than they were five years ago, according to a Kantar Retail research study for Sealed Air. Are you using this opportunity to your advantage? Many businesses are not.

Empowered consumers expect to have their items ship fast and free. But that's not the only pressure on retailers. They're being compared on their corporate values, range of offerings, pricing on packaging appearance, and ease of returns. Nearly seven in 10 Americans say they are more conscious of packaging materials and design today than they were five years ago. Consumers are looking for turnkey purchases and packaging must follow suit.

Look Beyond the Checkout

When considering how consumers interact with your brand, it's vital to look beyond the shopping experience and into the packaging.

Consumers are more compelled to share their unboxing experiences—positive or negative—on social

networks. The surprise and delight of a well-executed package can be as simple as adding customized branding and an easily re-sealable box, should the customer need to make a return or exchange.

Don't Let Your Packaging Go to Waste

Consumers are aware of the waste that ends up in their homes when items from the same order ship from multiple distribution points and thus arrive in ill-sized packages. They're even keener to know how to break down the package and dispose of it properly.

Furthermore, 77 percent of shippers responding to the Sealed Air survey say that packaging reflects a company's environmental values. If a brand's packaging doesn't reflect the company's sustainability values, customers will notice.

Companies must have an investment in ensuring that they optimize operational models for efficiency and packaging that is right-sized, easily returnable, and recyclable.

By taking advantage of ship-from-store stations, companies can not only maximize efficiency, but also reduce waste and damage.

By taking these steps, shippers will use less space inside of a box, add more protective packaging materials, and properly navigate higher shipping costs stemming from the dim weight pricing models major carriers have implemented over the past two years. Retailers will also reap the benefits of more sustainable shipping practices.

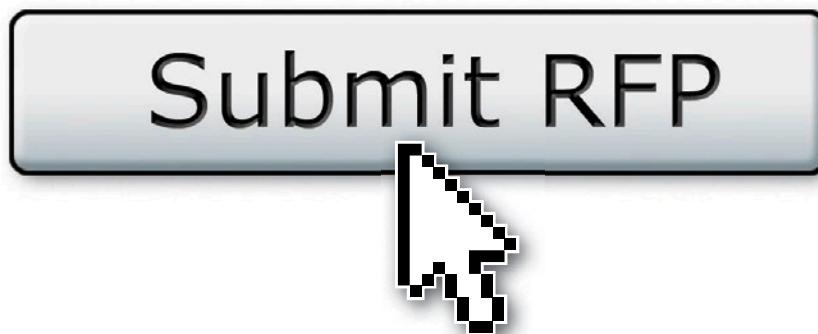
Packaging for Positive Perception

With nearly one in five purchases made online, your brand's impact on your customers goes far beyond the product itself. It extends to the packaging.

Some 76 percent of shoppers responding to the Sealed Air survey say that packaging positively affects how they perceive the retailer. The unboxing experience is a prime opportunity to bring a special moment to life and leave a positive impression on consumers.

Challenge yourself to go beyond a great product and deliver an outstanding brand experience for your customers when they open your package for the first time. ■

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[GREEN LANDSCAPE]

BY KAREN SAGE

Chief Marketing Officer, MercuryGate
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5 Ways Your TMS Can Help You Go Green

Some of the most common reasons to implement a Transportation Management System (TMS) include automation, visibility, and optimization, all of which can lead to reduced costs and greater efficiency. However, a TMS also has the ability to help you be more environmentally responsible.

Sustainability matters to businesses and individuals—both in terms of what they buy and how they select vendors. So, how can you make sure your supply chain is environmentally responsible? Here are five ways a TMS can help create a green supply chain.

1. Plan routes for fewest miles traveled. Most TMS solutions provide route planning as a core capability. With control tower visibility, you can build enterprise plans across your transportation network to ensure all shipments move using the most efficient route.

You can also use TMS to optimize multi-pick, multi-drop, and continuous moves while exploring backhaul options to eliminate empty miles. Strategic route planning can result in fewer miles driven and less emissions.

2. Optimize modal choices. Some TMS providers offer transportation optimization as an option. If parcel is native to the TMS, you can optimize

loads across all modes based on data regarding rates, transit times, and customer service requirements.

Intermodal rail may also be an economical way to handle cross-country moves, and some TMS solutions include options that allow users to access intermodal capacity from railroads directly. Reducing the number of vehicles on the roads decreases emissions.

3. Automate processes to reduce reliance on paper. Beyond the trucks, trains, and roads, you can improve your supply chain's environmental responsibility by changing the way you work. A strong TMS allows you to automate manual processes and simplify access to large amounts of data, without using paper to print spreadsheets.

4. Select carriers that model environmental responsibility. The American Trucking Associations (ATA), the trucking industry's advocacy group, has stated that one of its

goals is to reduce the carbon footprint of member companies. To that end, carriers are investing in new engines, using efficient particulate filters, and even testing alternative fuels.

You can make the conscious choice to select carriers that have demonstrated environmental responsibility and build this into your TMS carrier management or procurement preferences.

5. Model your carbon footprint. Some TMS solutions include capabilities for modeling the carbon footprint of your entire transportation plan, with factors weighted for each mode of transport you use.

For example, some systems estimate that less-than-truckload (LTL) transportation uses approximately 20 percent more CO₂ than truckload for the same distance and weight. That's because LTL modes typically travel farther to accommodate other stops and the average vehicle is not 100 percent full of cargo.

Finally, you can find an unexpected bonus in using your TMS to help you go green. Many capabilities and practices that are good for the environment are also financially good for your business. Operating more efficiently improves profitability. ■

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19



Steps

to creating a

Lean &

Green

Supply

Chain

Nurturing a green, sustainable supply chain benefits the environment and your bottom line. Here are some tactics—from analyzing your transportation network and warehouse design to looking for recycling opportunities—to help you go green and get lean.

By Karen M. Kroll

For specialty coffee company Keurig Green Mountain, ensuring a sustainable supply chain goes to the heart of its mission, which includes using the power of business to create a better world. To that end, Keurig works to responsibly source its coffee and engage 1 million people within its supply chain to improve their livelihoods by 2020.

Through Blue Harvest, an initiative coordinated via Catholic Relief Services to restore and manage water resources in coffee-producing areas, Keurig works with farmers to implement best farming practices, strengthen water governance, and protect watersheds. The program is “taking a landscape view of water challenges,” says Colleen Popkin, senior manager of sustainability with Keurig. Over the past several years, the program has helped to improve 47 water systems that serve 36,000 people, saving about 50 million liters of water.

Keurig’s work is not only good for the environment, but it’s also smart business. If farmers can’t make a living growing coffee, they’ll switch to other crops. “We’re seeing positive results coming from the program,” Popkin says. One example: In 2016, coffee production in the El Jilguero region of Honduras averaged 616.5 kilograms of green coffee per hectare, up from 345 kilograms per hectare in 2015, when the region was devastated by coffee rust, and struggled with poor farm management and a lack of investment.

Like Keurig, many companies can benefit by developing greener, more sustainable supply chains. Doing so reduces the legal, financial, and reputational risks to which most supply chains are exposed, says Luiz Amaral, global manager for the World Resources Institute’s Global Forest Watch. For instance, in some countries, purchasing supplies whose production leads to deforestation is illegal. Deforestation also can weaken the ability of a region to support agriculture, as forests help protect against ground erosion and water run-off. “Deforestation might put your own activity at risk in the long term,” Amaral says.



The World Environment Center works with Moroccan businesses, such as this bakery, to help them reduce energy and water consumption, minimize waste and raw material usage, and cut operating costs.

Moreover, sustainable supply chains often save money. After all, consuming less water and energy typically lowers expenses.

A green supply chain also is one component of a solid corporate reputation. “These days, global companies are expected to own their supply chains,” says Terry Yosie, president and chief executive officer with the World Environment Center, an environmental protection organization based in Washington, D.C. Consumers expect companies to know the players and activities, and to ensure they’re doing all they can to responsibly source and produce their goods.

Ready to boost your supply chain sustainability? Here are 19 tactics to take.

1 Engage leadership

As with any worthwhile undertaking, a commitment from the top is critical. Leadership needs to understand the strategic value or business case for sustainable procurement to the organization. With that understanding, they can dedicate resources and help determine goals and priorities that align with organizational targets, says Beth Eckl, director of the environmental purchasing program with Practice Greenhealth, a nonprofit

focused on positive environmental stewardship by organizations in the health care community.

2 Assemble a diverse group

Bringing together employees from different departments allows for a range of expertise. “A multi-disciplinary team is key,” says Julie Moyle, an outreach and engagement specialist with Practice Greenhealth. Working with individuals from different departments also creates champions of sustainability initiatives across the organization.

3 Identify the drivers of waste

Does a product’s packaging fail to keep it from breaking or spoiling? Do some systems have high mis-pick rates? That can increase returns, which consume energy and resources—and money. “Identify the weaknesses,” says Brian Neuwirth, vice president, sales and marketing with Unex Manufacturing, a Lakewood, N.J.-based order picking solutions provider.

Correcting problems that generate waste offers several benefits, says Brian Lipinsky, a lead researcher with the World Resources Institute, an

independent, non-governmental global research organization. It enables organizations to reduce purchases, make better use of the products they do purchase or produce, and can cut disposal fees.

4 Measure

The adage, “you can’t manage what you don’t measure,” applies in building a more sustainable supply chain. Once companies identify the drivers of waste, they need to measure how much is occurring. What percentage and what types of products are going to landfills or compost? Knowing that a particular product is being discarded at a higher rate than similar items can help identify actions to reduce waste and cut costs.

“There’s a lot of waste baked into the operations of many businesses,” Lipinsky says. “Once you take the first step to measure and examine what’s happening, you’ll notice opportunities for change.”

5 Set goals

Goals can spark action. A number of large food companies, including Nestlé and Campbell Soup Company, have committed to cutting food loss and waste in half by 2030. “Bold, ambitious targets can start to encourage creativity,” Lipinsky notes.

An organization doesn’t need to know exactly how it will reach the goal when it sets it. “Setting a goal shows you have initiative and the drive to reach for the top,” Lipinsky adds. Often, achieving the goals requires a combination of both larger, more sweeping actions, and small, incremental steps.

6 Define green

A decade or two ago, “green” focused almost entirely on a supply chain’s environmental impact. Today, a green or sustainable supply chain encompasses “economic prosperity, environmental quality, and social justice,” says Kim McQuilken, president of sales and



Photo: Catholic Relief Services

Blue Harvest works with farmers such as Ever Fuentes (pictured) to improve coffee management and source protection efforts. This spring and water holding tank on Fuentes' coffee farm in El Salvador provides water for five communities.

marketing with Atlanta-based Spend Management Experts.

At the same time, each organization needs to determine how to apply “green” concepts to its operations. When purchasing supplies, for instance, “you have to define what a ‘green’ widget is,” Eckl says. Should the definition include the method of production? The distance the widget is transported? Whether it’s free from chemicals of concern?

To be sure, not every organization has the resources to examine each product in such depth. Selecting products that have been certified by credible third-party standards and certifications, such as EPA’s Energy Star, can streamline the process.

7 Analyze the transport network

Companies often can reduce the amount of energy used to transport materials and products. Transportation Insight, a provider of supply chain services based in Hickory, N.C., worked with a snack food manufacturer that frequently shipped products between plants, before assembling them into truckloads that would travel to the final customer. An analysis showed the company could lower

energy use by moving products directly to the end customer in less-than-truckload (LTL) shipments. “It was better to eliminate the transportation moves,” says John Richardson, vice president of supply chain analytics.

Conversely, a company that has multiple LTL shipments traveling between, say, Texas and California, may cut energy use by combining them on one truck that goes to an LTL center in California, where the shipments are broken apart. Or, the company may be able to hold some customers’ orders for several days to accumulate bigger shipments that more efficiently use the space within a truck.

“Look at your network and how you can consolidate shipments to maximize efficiency and minimize the number of trucks,” Richardson advises.

Also check for “double shipping,” McQuilken says. For instance, a company might ship products from a distribution center in Indianapolis to Sacramento, only to have part of the shipment backtrack to Wyoming. A network analysis can bring this to light.

8 Conduct a backhaul analysis

“One thing that chews up costs, as well as the environment, is empty

trucks returning to the point of origin,” McQuilken says. Loading products onto those trucks means fewer trips and less wasted fuel.

The first step is to look internally for products that can fill the trucks. “Make sure that inside the company, the left hand is talking to the right,” McQuilken says. If no options are available internally, many brokers can identify potential backhaul partners.

9 Reduce idling

Some organizations implement “no idling” policies for trucks, ambulances, and shuttles traveling to and between their campuses, in order to reduce air pollution, Moyle says. She adds that new technologies and power hook-ups can allow vehicles with refrigeration systems and vital equipment to continue to operate.

10 Analyze warehouse design efficiency

A layout that reduces the number of times an item is handled and cuts the distance traveled between actions can reduce both labor and energy costs. An efficient layout allows many companies

to work within a smaller facility, or avoid expanding. "One of the easiest ways to be green is to reduce your footprint, or to not expand," Neuwirth says.

11 *Go beyond compliance*

Focusing strictly on compliance, often through supplier audits, can keep organizations from maximizing the benefits of greener supply chains. "You get death by thousands of audits," Yosie notes. "It's looking at compliance through a legalistic prism, versus something that will generate value." Companies and their suppliers often end up simply going through the motions.

"Just complying with a set of standards is not enough for us to secure the coffee we need to grow as a business," says Keurig's Popkin. Instead, Keurig needs to "get in the trenches" with its suppliers, and work to address the complex issues of water and farm management.

12 *Collaborate*

"Seek partnerships that help you make a more sustainable enterprise," recommends Joanne Spigonardo, senior

associate director of business development with the Initiative for Global Environmental Leadership at The Wharton School. One example: some large companies share pallets used to ship some of their products; previously, each company used its own pallets. Sharing saves money and cuts waste.

13 *Involve procurement*

The procurement department can work with suppliers to implement environmentally preferable purchasing (EPP) programs, says Mary Larsen, director of sustainability and supplier diversity with Advocate Health Care, based in Downers Grove, Ill. In addition to considering price and quality, these programs consider a product's environmental performance. For instance, they can ask suppliers whether their products can be recycled at the end of their lives, and whether the supplier is trying to reduce waste and energy use.

Over time, such questions should lead to a greater selection of sustainable products at reasonable prices. "There's a huge opportunity to bend the cost curve, the more we demand these products," Larsen says.

14 *Leverage technology*

Technology, such as the World Resource Institute's Global Forest Watch, can help organizations streamline their sustainability efforts. Global Forest Watch uses satellite technology, big data, and cloud computing to cost-effectively provide real-time information on deforestation.

Before this system was available, companies either had to have individuals on the ground in all areas of their supply chains in which deforestation was a risk, or purchase satellite imagery, which can be costly, Amaral says. Now, they just need to know the location of the supplier. The technology can provide value across a range of supply chains, include those of agricultural companies, food processors, and retailers.

Technology also can help companies train employees and vendors on their supply chain sustainability initiatives. "You can't send people all over to deliver support," Yosie says. But most companies can develop websites that provide information and answer questions.



Photo: World Environment Center

By advancing sustainable packaging solutions worldwide, the World Environment Center helps mobilize people and organizations for economic, social, and environmental improvement.

15 *Optimize packaging*

Companies often can reduce both costs and resource consumption by modifying their packaging. “It starts with the materials,” McQuilken says. Many packaging companies offer sustainable packaging options.

Package size also, not surprisingly, impacts resource use. Most consumers who’ve placed online orders have received shipments in which small products, such as a jar of skin cream, traveled in large containers. “There’s a lot of shipping air,” McQuilken says. Experiment to identify products that can be safely shipped in smaller boxes or even envelopes.

16 *Reuse products when possible*

After the rise of AIDS and HIV, and the washing up of medical waste on New England beaches in the 1980s, suppliers began producing and healthcare organizations began purchasing single-use, disposable items. “It became standard practice to use something once and throw it away,” Moyle says.

The use of disposable supplies and equipment today can alleviate infection control concerns, and the convenience factor makes it a hard habit to break, but the practice comes at a high financial and environmental cost.

While safety in the healthcare supply chain remains paramount, organizations are finding safe ways to reuse some products. For the past decade, Advocate has worked with a reprocessing firm that accepts items labeled as single use and reprocesses them according to FDA-approved instructions.

Often, products can be reprocessed multiple times. That reduces resource consumption and saves money, because the products can be repurchased at about half their original prices. “We’re saving not only the



Consumers want to know that their food is sustainably sourced. The World Environmental Center works with companies such as this olive oil producer in Morocco to employ business practices that advance sustainable development.

cost of the device, but also the cost of disposal,” Larsen says.

17 *Analyze returns processes*

As e-commerce grows, so do returns. Often, companies struggle to process them efficiently, especially if they’re shipped to retail locations or distribution centers, McQuilken says. Many companies can process returns more efficiently, and with less resource use, within a central returns location.

18 *Focus on total lifecycle cost*

Conventional wisdom has sometimes held that purchasing green products and applying environmentally friendly processes costs more than other products and processes. That’s not always the case, however. “You have to look not just at

the purchase price, but also at the total cost of ownership,” Eckl says. Any analysis should consider the energy, water, and labor required to maintain, operate, clean, and dispose of an item, as well as the initial investment. Once all these factors are included in the calculations, green products often become competitive.

19 *Maintain continuous focus on building a greener supply chain*

It doesn’t make sense to put off taking steps to green your supply chain. Nor does it make sense to work at it only sporadically. Many companies analyze and streamline their transportation network every three to five years. While that’s a start, their energy use often inches back up in the interim. As Richardson recommends, “Get engaged and keep a continual focus on your supply chain.” ■

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75 GREEN SUPPLY CHAIN PARTNERS

Inbound Logistics features its annual G75 — a carefully curated list of 75 companies that go above and beyond to ensure their global supply chains are sustainable, and that their operations are socially and environmentally friendly.

These companies have spent years developing and implementing best practices to ensure the footprint they leave on the world is a positive one.



AAA Cooper
www.aaacooper.com

Over the past few years, AAA Cooper has enhanced dock lighting with t5 high-output bulbs in most facilities; designed gap reduction devices for pup trailers; and updated its existing trailer skirt package to further direct airflow more efficiently. AAA Cooper is directly involved with manufacturers on prototype testing of products and equipment to understand leading-edge product availability and incorporate it early after release.

CURRENT GREEN INITIATIVES

- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Expansion of skirting to close the gap in pup trailers for more efficient direct airflow.



Alliance Shippers
www.alliance.com

The Alliance Shippers sustainability initiative is using what means it has to reduce negative impacts on the environment. Building its fleet of 53-foot refrigerated containers with the most current technology enables Alliance Shippers to move refrigerated goods via the nation's railroad system. As a SmartWay participant/partner, Alliance Shippers continuously strives to improve fuel efficiencies within its own refrigerated fleet.

CURRENT GREEN INITIATIVES

- Use alternative fuel/energy sources

NOTABLE ACHIEVEMENT

Using rail transportation resulted in reducing CO₂ emissions by 67.7 percent as compared to the same goods moved via trucks.

American Global Logistics
www.americangloballogistics.com

At American Global Logistics (AGL) headquarters, sustainability initiatives include practicing energy conservation by not turning on lights in offices and depending on natural lighting when possible, reducing waste, and utilizing a recycling program. The 3PL leases office space that has earned Energy Star and LEED awards.



CURRENT GREEN INITIATIVES

- Use alternative fuel/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

AGL successfully converted two offices to a paperless program; a third office is approximately 75 percent paperless and will be 100 percent paperless by end of 2017.

APL Logistics
www.apllogistics.com

Using its carbon footprint calculator and green supply chain analysis, APL Logistics engineers can identify more sustainable practices and savings for shippers. The 3PL's analysis tools estimate the amount of greenhouse gases produced by using fossil fuels for electricity, heat, transportation, and other purposes at each warehouse. Simulation tools help explore different warehouse configurations to reduce movements and double handling.

NOTABLE ACHIEVEMENT

APL is able to avoid about 430,000 metric tons of CO₂ emissions each year by shipping intermodal instead of truck, and through its OceanGuaranteed service instead of air.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage

ArcBest
www.arcb.com

Through ABF Freight, ArcBest has been an active participant in the conservation movement for decades. In 1976, the carrier began voluntarily limiting its trucks' top speeds to conserve fuel and reduce emissions. In 1994, the company incorporated new trucks with computerized engine shut-offs, which reduced idling and minimized fuel consumption while limiting emissions. ABF Freight also purchased 800 new 28-foot trailers with aerodynamic skirts to add to its fleet of 15,000 trailers (already retrofitted with that feature) to improve fuel economy and reduce wind resistance.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reduce energy usage
- Energy-efficient equipment

NOTABLE ACHIEVEMENT

ABF Freight has been a SmartWay partner since 2006, and won the 2014 SmartWay Excellence Award.



Averitt Express
www.averittpress.com

Averitt was one of the 52 partners to launch the EPA SmartWay program in 2004. Through SmartWay, Averitt voluntarily commits to meeting specific environmental and energy-saving goals and sharing its progress annually with the EPA. With the help of this program, Averitt established a systematic approach to emissions reduction and fuel conservation.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Since 2004, Averitt has lowered its CO₂ emissions by an estimated 27.05 percent.

Americold
www.americold.com

Americold uses power efficiently to get the most out of each kilowatt hour. The 3PL works with waste management and local recycling organizations to take old materials handling equipment batteries, waste packaging, pallets, cardboard, plastics, and other materials. Americold is targeting a reduction in waste that heads to landfills each year, based on a year-over-year goal.

CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources
- Reuse/recycle program
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Americold saved 320 metric kilowatt hours of electricity since 2010—enough to power 29,000+ homes for one year, and the equivalent of keeping 264 metric lbs. of CO₂ from being released.

BDP International
www.bdpinternational.com

As a steering committee member of the Clean Cargo Working Group, BDP works with industry peers, measures carbon emissions, and accesses carrier environmental data. BDP was named a Responsible Care Partner of the Year for 2016 and 2017. In 2017, Ecovadis gave BDP a silver CSR Rating. Further achievements include: distributing the second-annual Green Leaf Award for innovation in sustainability; establishing the Environment, Health, and Safety (EHS) program; and creating a network of EHS ambassadors around the globe.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting
- Sustainable office planning

NOTABLE ACHIEVEMENT

The BDP Green Leaf Award for innovation in sustainability identified an opportunity for digitization in the 3PL's Netherlands office. Digitizing files reduced costs by 25 percent overall and costs per file by 36 percent.

BNSF Railway
www.bnsf.com

BNSF continued or implemented the following initiatives to improve fuel efficiency and reduce emissions: fleet replacement with lower emission locomotives, installation of locomotive energy management systems, installation of automatic engine stop-start devices (anti-idling), top of rail lubrication, fuel-efficient operations training and reward program for train crew, capital investments to improve network fluidity, and horsepower optimization per trailing ton.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuel/energy sources
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Shippers using BNSF avoided 34 million metric tons of emissions in 2015, and over the past 10 years, the rail has cut average locomotive particulate matter emissions nearly in half.

Cargo Transporters
www.cgor.com

Cargo Transporters continues to find new ways to reduce emissions and electricity consumption, increase recycling at all facilities, and cut on-highway fuel consumption.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Energy-efficient lighting
- Shorepower for waiting trucks

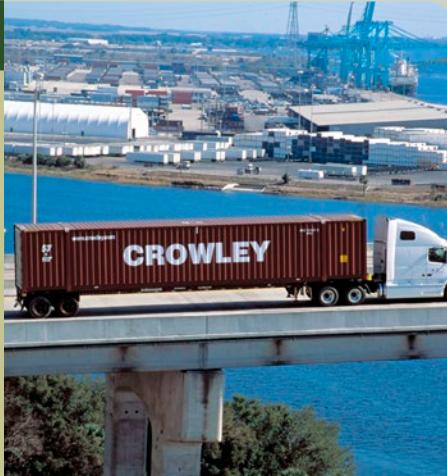
NOTABLE ACHIEVEMENT

Cargo Transporters equips all trucks in its fleet with a renewable power source (battery pack).



Crowley
www.crowley.com

A Clean Cargo Working Group member, Crowley has switched its vessels, tankers, and equipment to LED lights; chooses reusable bottles over disposables; and leverages technology to cut paper usage. In 2016, 97 Crowley vessels received Certificates of Environmental Achievement from the Chamber of Shipping of America. And, the ocean liner's headquarters is Silver LEED-certified, with recycling as well as water- and energy-efficiency features.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting
- Reduce water and plastics usage in facilities

NOTABLE ACHIEVEMENT

Commitment Class ships launching in 2017 reduce emissions of sulphur oxide and particulates by 100 percent, nitrogen oxide by 92 percent, and CO₂ by 35 percent per container compared with current fossil fuels.

Crown Equipment Corporation
www.crown.com

In 2016, Crown became the first two-time recipient of the gold-level award in Ohio EPA's Encouraging Environmental Excellence program, which recognizes companies that demonstrate a high level of sustainability. Crown delivers high-quality, energy-efficient lift trucks that use fewer parts, require less maintenance, and produce less waste, while enhancing the customer experience through longer usable life and greater productivity.



CURRENT GREEN INITIATIVES

- Use alternative fuel/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Crown has received three State of Ohio Governors awards and four U.S. EPA awards, and was the first to have two facilities receive the Ohio EPA's Encouraging Environmental Excellence Gold Award.

Celadon Trucking
www.celadontrucking.com

A long-time member of SmartWay, Celadon keeps a current fleet of tractors, and relies on the latest technology to help reduce emissions and fuel consumption. The trucker outfits its fleet of tractors with speed limiters and equips its trailers with skirting. Celadon regularly maintains its tractors to run at optimum efficiency, and its cabs have auxiliary power units to eliminate the need for engine idle to maintain temperatures.

CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The roof of Celadon's administration building contains more than 400 solar panels. The carrier sells the harnessed energy to a local energy company.

CaseStack
www.casestack.com

CaseStack's retail consolidation programs help conserve natural resources by reducing dock congestion, improving warehouse efficiencies, and decreasing the number of trucks on the highway. The resulting supply chain consumes less energy and produces lower amounts of carbon emissions. CaseStack has been a SmartWay partner for the past eight consecutive years.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CaseStack's consolidated truckloads reduce carbon emissions by 58 million pounds of CO₂ each year.



CSX Transportation
www.csx.com

Rail is the most environmentally friendly way to move freight over land. In recent years, CSX has been recognized for sustainability and corporate social responsibility by Dow Jones Sustainability Index, CDP, CR Magazine, and others.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CSX can pull one ton of freight 474 miles on a single gallon of fuel.

CT Logistics
www.ctlogistics.com

CT has invested in software to provide shippers the tools to make greener choices in their supply chains. The software helps shippers drive energy efficiency with supply chain routing analysis technologies, and helps identify ways to consolidate small shipments into truckloads with stop-offs to reduce costs and fuel. These systems enable shippers to choose environmentally conscious routings, modes, and carriers with the shortest transit times to reduce fuel consumption and lower CO₂ emissions.



CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

CT Logistics saved more than 200,000 kilowatt hours of electricity over the past year by replacing all facility lighting with LED lamps and bulbs.

C.H. Robinson
www.chrobinson.com

C.H. Robinson helps contract carriers leverage backhaul capacity to reduce empty miles; optimizes loads and modes to reduce miles and more effectively utilize transportation equipment; and provides network analysis to help minimize inventory and transportation miles. The 3PL also consolidates smaller loads into larger trailers and containers to reduce the total number of shipments.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

C.H. Robinson helps shorten the distance from farm to table, and strengthen local economies through legacy and regional farming programs.

DHL Supply Chain
www.dhl-usa.com

DHL's environmental protection program, GoGreen, focuses on improving carbon efficiency and reducing air and noise pollution—including direct fleet emissions and indirect emissions from transportation subcontractors. DHL continues to implement measures to improve efficiency, optimize networks and routes, and improve energy efficiency in its buildings.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting
- Composting program
- Waste to energy from DC materials

NOTABLE ACHIEVEMENT

DHL has set a climate protection target to reduce all logistics-related emissions to zero by 2050.

Crane Worldwide Logistics
www.cranewww.com

The 3PL's Crane Cares initiative is composed of three specific branches through which it demonstrates environmental commitment: Green Worldwide, Give Worldwide, and Live Well Worldwide. Through Crane Cares, the Crane Worldwide Logistics team undertakes hundreds of campaigns and events each year to impact change in local communities around the world, and to support global causes.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

As part of its 2017 Save Water initiative, the Crane Cares program to date has conserved more than 4,043 liters of water, and recycled 1,625 liters.



Dupré Logistics
www.duprelogistics.com

Dupré's fleet has fuel-efficient specifications and a top speed of 62 mph, and utilizes fuel-efficient tires as part of an overall fuel conservation and emissions reduction strategy. The 3PL utilizes Omnitracs and Green Road technologies to monitor safety and fuel economy supporting continuous improvement. In 2015, the EPA honored Dupré with a SmartWay Excellence Award for freight carbon efficiency—a top 20-percent designation.

CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting



NOTABLE ACHIEVEMENT

A company-wide recycling effort is underway.



DSC Logistics
www.dsclogistics.com

DSC's sustainability programs include Logistics Center Management, which tracks electricity, water, and waste tonnage usage, and Transportation Management, which consolidates shipping and enforces a strict "no idle" policy. A SmartWay partner, DSC has received multiple sustainability awards.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging

NOTABLE ACHIEVEMENT

DSC's Network Modeling and Design helps companies implement more efficient supply chain networks, reducing carbon footprints.

Echo Global Logistics
www.echo.com

As a SmartWay partner since 2010, Echo helps clients improve supply chain efficiency and reduce transportation-related emissions by advising on efficiencies that improve both the supply chain and carbon footprint. For example, Echo noted one food and beverage client moved freight from overseas to California and then to Chicago. The client broke down the freight in Chicago, then returned half of it to California, incurring an environmentally wasteful expense. Echo advised the client to transition the breakdown procedures to the California location, thereby saving time and resources.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

SmartWay's annual report tells shippers how environmentally efficient a firm is. In 2015, Echo listed at 13.5 grams/mile of nitrogen—well below the 19.8 grams/mile average of 600 logistics firms.

England Logistics
www.Englandlogistics.com

The England Logistics team safeguards food and beverage shipments by utilizing its network stocked with temperature-controlled facilities and equipment, resulting in fewer transportation risks. Using optimization software also allows England to build an economic strategy for each shipment, resulting in reduced miles. These practices ensure that England transports each shipment in the most resourceful way, with a minimized environmental impact.

CURRENT GREEN INITIATIVES

- Reduce energy usage
- Sustainable packaging

NOTABLE ACHIEVEMENT

England Logistics' sustainability initiatives are designed to reduce paper waste and decrease personal emissions through carpool incentives.



Expeditors International
www.expeditors.com

Expeditors creates efficient value chains, including carbon emissions reporting for all customers. Green teams at all Expeditors locations measure, monitor, and reduce carbon emissions and water and energy usage. The 3PL released its first Corporate Responsibility Report, became a member of the Clean Cargo Working Group, and achieved ISO 14001 certification.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Expeditors saved 8.5 million pages of paper since October 2015, diverted 60 tons of waste from the landfill via food waste and composting programs at its headquarters, and converted 20+ facilities to LED lighting.

G&D Integrated
www.gdintegrated.com

As an inaugural member of the B20 Club, which recognizes Illinois-based fleets running on blends of B20 biodiesel fuel, G&D Integrated has made a commitment to using this renewable, clean-burning fuel because more shippers are asking for it. Using biodiesel reduces carbon monoxide, hydrocarbons, and particulate matter—all of which impact air quality.

CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources

NOTABLE ACHIEVEMENT

Through the use of biodiesel in its fleet, G&D Integrated's annual reduction in CO₂ emissions in 2016 equaled 229,711 fewer gallons of gasoline consumed.

FedEx
www.fedex.com

FedEx integrates environmental practices into its daily operations, and works to increase efficiencies and reduce waste and emissions. The company has set the following goals to reduce its footprint: reduce aircraft emissions 30 percent by 2020; increase FedEx Express vehicle efficiency by 30 percent by 2020; get 30 percent of its jet fuel from alternative fuels by 2030; and expand on-site renewable energy generation and procurement of renewable energy credits.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The company operates 118 all-electric trucks and 364 commercial hybrid trucks, and is adding 87 all-electric trucks, bringing its all-electric global vehicle count to 130.

Gulf Winds International
www.gwii.com

Gulf Winds' Port Houston warehouse model of 2 million+ square feet of space consolidates ocean containers to domestic truckload, eliminating empty container miles and associated carbon emissions. The company's 350 power units in the Texas intermodal market use technology that matches available import and export equipment in real time, creating sustainability for shippers and steamship line partners. Gulf Winds invests in best-in-class equipment, including the largest and newest fleet of owned chassis in the region along with the most fuel-efficient tractors.

NOTABLE ACHIEVEMENT

Through its transload program, Gulf Winds eliminates empty truck miles, resulting in 20,000+ metric tons of CO₂ emissions saved annually.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reduce energy usage
- Energy-efficient lighting

Georgia Ports Authority
www.gaports.com

By electrifying ship-to-shore cranes and refrigerated container racks, the Port of Savannah avoids the use of more than 5.4 million gallons of diesel annually. The port has also retrofitted 11 locomotives with automatic engine stop-start devices, and reduced truck idling time through automated gates, extended hours, and the Cross Terminal Roadway, along with last-mile road projects completed in conjunction with the Georgia Department of Transportation.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Electric rubber-tired gantry cranes reduce fuel consumption by more than 95 percent per crane. The GPA's program, which received an EPA Clean Air Excellence Award, virtually eliminates diesel emissions.



Hub Group
www.hubgroup.com

Hub Group has been a member of SmartWay since 2004 and has received multiple SmartWay Environmental Excellence Awards. The intermodal service provider encourages the use of day cab tractors, which save approximately 4,056 gallons of diesel fuel per day/cab annually. Hub Group's corporate office received LEED Gold Certified in 2014, and includes natural habitat landscaping, energy-efficient lighting, rainwater harvesting, and electric vehicle charging stations.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

By shipping intermodal vs. over-the-road, Hub Group saved 143 million gallons of fuel and 3.2 billion pounds of CO₂—a 68.9 percent savings versus truck in 2016.

ITS Logistics
www.its4logistics.com

ITS's SmartWay-endorsed tractor/trailer fleet averages 7.8 MPG, one of the most efficient in the industry. ITS equips its tractors with complete wind fairing packages for reduced drag, lightweight aluminum wheels, and "super single" tires with auto-inflation systems that last 300,000+ miles. The trailers feature side skirts, translucent roofs, and e-track systems for load bars to improve cube utilization.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Annually, ITS uses 673,000 fewer gallons of gas than the industry average.

J.B. Hunt Transport
www.jbhunt.com

J.B. Hunt is a partner in the EPA's SmartWay program and has won the SmartWay Excellence Award every year since 2008. The 3PL provides transparency for all carbon emissions and sustainability information to customers and investors through surveys including the Carbon Disclosure Project, EcoVadis, and company-specific surveys. Other green initiatives include LTL consolidation and network optimization, MPG tracking and improvement maintenance, lightweight and aerodynamic equipment, driver training, and alternative fuel options such as natural gas and biodiesel.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting
- MPG reduction

NOTABLE ACHIEVEMENT

In 2016, J.B. Hunt converted product shipments to energy-efficient intermodal, reducing carbon emissions equivalent to removing 750,000+ passenger cars from America's highways for one year.

Kane Is Able
www.kaneisable.com

Kane Is Able is committed to reducing pollution and congestion with smarter trucks and delivery methods. KANE facilities couple energy-efficient T5 lighting with motion sensors and all are engaged in recycling programs. Additionally, KANE's sophisticated contract packaging capabilities enable companies to integrate final packaging into distribution operations, eliminating freight runs to and from outside packagers, and reducing time, cost, and carbon emissions in the overall supply chain.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage

- Sustainable packaging
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

KANE saves 3.5 million kilowatt-hours and 343,000 gallons of diesel annually. Its retail consolidation program reduces distribution costs as much as 35 percent while reducing carbon emissions.



Kenco
www.kencogroup.com

Kenco continuously works to reduce its carbon footprint. Creating green initiatives in logistics is an important part of every budget planning, and goals and objectives meeting.

CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources
- Reuse/recycling program
- Sustainable packaging
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Kenco completed lighting upgrades at three facilities, and expects them to produce an annual savings of \$227,000.



Lufthansa Cargo AG
www.lufthansa-cargo.com

Lufthansa Cargo constantly works to reduce CO₂ emissions and aims to reduce its specific CO₂ emissions by 25 percent by 2020, in comparison to 2005. In 2016, Lufthansa Cargo achieved 16.2 percent of this target. The carrier has its own environmental strategy for continuous improvement focusing on: green flying, green ground, environmental management system, innovation, partnerships, data transparency, public relations, and green solutions. Lufthansa Cargo invested in five new Boeing 777F—the most efficient freighter in its class. A dedicated Fuel Efficiency Team constantly searches for improvements in flight-related processes by using the new big data tool OMEGA (Ops Monitoring and Efficiency Gap Analyser), for which Lufthansa Cargo garnered the DQS German Excellence Award in 2017.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

OMEGA is a big data tool that collects flight data and provides information to reduce fuel consumption and CO₂ emissions. With it, Lufthansa can reduce 10,000 tons of CO₂ per year.

Lynden
www.lynden.com

Lynden is the first Alaska-based transportation company to be recognized by SmartWay and the first trucking company to earn the Green Star Award for Alaskan businesses. Lynden's super-efficient reefer units, shore-side plug-in technology, and electric forklifts save fuel and reduce emissions. LED lighting has improved safety and reduced energy use, and stormwater pollution prevention exceeds local requirements. Lynden's fleets consistently score among the most efficient in the nation in terms of CO₂ per ton mile as measured by the SmartWay Transport Partnership.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Facility upgrades have saved 2,350 megawatt hours of electricity and nearly 7 million BTUs of heating fuel/natural gas annually. This equals the average energy used in 167 homes or 335 passenger vehicles annually.

Matson
www.matson.com

In 1993, Matson's Zero Solid Waste Discharge policy, developed with Ocean Conservancy, set the industry standard for environmental protection at sea. Its Greentainer program uses a revenue slot on every sailing to collect all solid waste for transfer to recycling and waste-to-energy facilities on shore.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Matson recently installed engine exhaust cleaning systems on its Alaska fleet and will outfit its two new Aloha Class vessels, currently under construction, with dual-fuel, LNG-capable engines.



Murphy Warehouse Company
www.murphywarehouse.com

Murphy Warehouse sustainably upgraded its logistics campuses with energy savings and power generation, pollution abatement, and resource management. The 3PL's comprehensive annual corporate sustainability report follows Global Reporting Initiative standards.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting
- Responsibly disperse stormwater

NOTABLE ACHIEVEMENT

Murphy's 2016 goals were to reduce greenhouse gas emissions and emit less than 50 percent of the national average for similar facilities; it emitted only 30 percent.

Norfolk Southern Corporation
www.nscorp.com

In 2016, Norfolk Southern (NS) achieved record locomotive fuel economy, improving fuel efficiency by 1.5 percent. Through its innovative locomotive rebuild program, NS recycles old units, reducing business costs and environmental impacts by equipping them with cleaner-burning, more fuel-efficient engines. Through community partnerships, NS helps urban locales improve air quality by equipping rail yards with custom idle-reduction technologies and introducing its "Eco" locomotives—rebuilt 1980s units outfitted with low-emission engines.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting
- Capturing stormwater

NOTABLE ACHIEVEMENT

Through improved energy management and operational practices, NS reduced locomotive greenhouse gas emissions by 8 percent per revenue ton mile since 2010, and invested \$5.6 million to reforest 10,000 acres in a carbon-mitigation partnership.

NFI
www.nfiindustries.com

Trucks across NFI's 2,300+ dedicated fleet use airtabs, trailer skirts, battery-powered auxiliary powered units, and speed limiters to improve fuel usage. The 3PL's headquarters and many warehouses operate on solar power. NFI recently won the Advanced Clean Transportation Expo Fleet Award for Shippers & Carriers.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Solar panels

NOTABLE ACHIEVEMENT

NFI's 100-percent low emission, late-model tractor fleet has increased miles per gallon by at least 2 percent per year for the past seven years.

Old Dominion Freight Line
www.odfl.com

In 2018, Old Dominion Freight Line will invest in a new fuel-efficient fleet. Every new service center is equipped with LED lights, and all 226 existing service centers are being retro fitted with LEDs. Other green initiatives include adding skirts to every trailer along with fully equipped technology, like onboard computers that track MPG and tire inflation systems that increase fuel mileage and reduce emissions. Service center shops are converting to sole recycling water, where 1,000+ gallons of water are consistently on reserve. Old Dominion is EPA SmartWay certified.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Solar panels
- Energy-efficient lighting
- Recycle oils, filters and scrap steel

NOTABLE ACHIEVEMENT

ODFL's fleet is 100 percent low rolling resistance, which increases fuel mileage and reduces emissions.



Northwest Seaport Alliance
www.nwseaportalliance.com

The Northwest Seaport Alliance, a partnership between the ports of Tacoma and Seattle, reduces port-related emissions through clean truck programs, shore power at terminals, retrofitted cargo-handling equipment, and cleaner-burning ship fuels.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The alliance achieved a 95-percent reduction in zinc and copper at terminal operations; and reduced emissions 58 percent from trucks, 25 percent from trains and 17 percent from ships.

ORBIS Corporation
www.orbiscorporation.com

ORBIS manufactures reusable plastic packaging, which can be recovered, recycled, and reprocessed into new packaging products at the end of its lifespan without entering the solid waste stream. The company provides services and plastic offerings that can help customers reduce and measure their overall environmental impact. ORBIS has partnered with Franklin Associates to create an environmental calculator that helps customers see what their environmental footprint is and what it could be when switching to reusable packaging, by evaluating cost per trip, savings over packaging life, solid waste, energy and greenhouse gas emission.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Sustainable packaging

NOTABLE ACHIEVEMENT

ORBIS' new Silao, Mexico, plant was designed around a streamlined operational footprint to reduce fork truck movement and environmentally friendly features—including ample skylight—to decrease carbon footprint.

Penske Logistics
www.penskelogistics.com

Penske's ClearChain Technology Suite converts data into useful information to increase visibility and enhance supply chain optimization. The system optimizes driver management by monitoring performance while a truck is moving, captures proof of delivery electronically, and identifies the best places to purchase fuel along the driver's route.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Penske reduced CO₂ emissions by 27 percent, NO_x emissions by 65 percent, and particulate matter emissions by 86 percent on a gram/ton-mile basis.

Performance Team
www.performanceteam.net

Performance Team (PT) maintains a "clean" truck fleet that uses SmartWay-approved tires, and trailer skirts and under trays to improve fuel efficiency. PT utilizes on-demand packaging and recycles and reduces obsolete hardware in its facilities.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials

NOTABLE ACHIEVEMENT

PT has transloaded more than 300,000 containers in the past six years. Using a 3:2 compression standard, this translates to approximately 200,000 outbound trailers and a 30-percent reduction in carbon footprint.

Port of Long Beach
www.polb.com

The Green Port Policy, which the port adopted in 2005, is an aggressive, comprehensive, and coordinated approach to reduce the negative impacts of port operations. Some examples of sustainable practices at the port include the development of a Sustainability Task Force, an environmental management system to establish sustainable stormwater practices during construction projects, and a wastepaper and container recycling program conducted in partnership with the Conservation Corps Long Beach.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program

NOTABLE ACHIEVEMENT

The Port of Long Beach holds a 20-year record of environmental protection programs.



PECO Pallet
www.pecopallet.com

PECO was founded on the sustainable principle of reusing pallets to conserve resources. The company builds its wood block pallets from responsibly forested timber. The pallets are continually repaired, reused, and recycled and no harmful chemicals are used. PECO's block pallets offer structural rigidity, and can be stacked and transported efficiently. By efficiently managing a controlled pallet pool, PECO turns its pallets an average of 4 times per year. Strict maintenance standards extend pallet life to 10+ years.



CURRENT GREEN INITIATIVES

- Reuse/recycling program
- Sustainable packaging

NOTABLE ACHIEVEMENT

At PECO Pallet, zero materials go to the landfill. All retired pallet components—even the nails—are reused or recycled.

Port of Portland
www.portofportland.com

Port of Portland's energy management program identifies actions and projects that make port operations as efficient as possible, reducing carbon emissions and often saving money. The port became a founding reporter to The Climate Registry, and developed a comprehensive carbon footprint reduction and energy management strategy to identify projects that can lead to significantly reducing energy use.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage

NOTABLE ACHIEVEMENT

The Port of Portland set a target to reduce port direct and indirect greenhouse gas emissions 15 percent below 1990 baseline levels by 2020. The port continues to meet this target through the purchase of certified renewable energy credits equal to 100 percent of port-wide electric energy usage and completing planned energy efficiency improvements.

Prologis
www.prologis.com

In 2015, 45 of Prologis' new development projects, totaling 15 million square feet across 15 countries, received sustainable building certifications, bringing its total certified projects to 68 million square feet globally since 2006. In addition, the company partners with colleagues to reduce energy, water, and waste in its operations; collaborates with community organizations to support environmental causes; and engages with suppliers around its Supplier Code of Conduct.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels

NOTABLE ACHIEVEMENT

Prologis upgraded approximately 73 percent of its facilities with energy-efficient lighting, and developed 149+ megawatts of rooftop solar energy installations in nine countries since 2007.

Propak Logistics
www.propak.com

In 2016, Propak Logistics improved total operational wood waste recycling to 96 percent across its network. It implemented LED conversion initiatives in its facilities, reducing electrical consumption by 51 percent. Propak invests in trailer tracking, aerodynamic skirting, and logistics optimization.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Since joining SmartWay in 2010, Propak achieved 137 percent growth in total miles driven, 12 percent yearly reduction in CO₂ g/mile.

Port of Baltimore
www.mpa.maryland.gov

The Port of Baltimore's environmental strategy includes establishing programs to evaluate emission control technologies for its ports, reviewing and updating existing water quality programs, and reducing energy consumption and diesel fuel use. The port also continues to support helping applicants replace older dray trucks with newer vehicles with engines that meet stricter emissions standards. The goal is to reduce air pollution and greenhouse gases associated with transporting goods to and from the Port of Baltimore.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage

NOTABLE ACHIEVEMENT

A diesel equipment upgrade program provides funds to retrofit, repower, or replace older vehicles and equipment with more emission-efficient engines or technologies.



Port of Los Angeles
www.portoflosangeles.org

Port of Los Angeles continues to reduce the share of emissions its activity contributes to the South Coast Air Basin. Currently, only 2 percent of all SO_x emissions in the South Coast Air Basin are attributable to port operations compared with 23.2 percent in 2005.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Solar panels

NOTABLE ACHIEVEMENT

The port demonstrated the world's first marine terminal able to generate all energy needs from renewable sources. It is expected to reduce 3,200 tons of greenhouse gases and 28 tons of harmful emissions annually.

Ruan
www.ruan.com

Three-time SmartWay Excellence Award winner Ruan utilizes lightweight trucks and trailers, proven aerodynamic solutions, auto-inflation tire systems, onboard monitoring, and auto-shift power units. Ruan also participates in the Carbon Disclosure Project, through which it contributes to the Clean Cities annual study on diesel reduction. Ruan also joined the National Clean Fleets Partnership.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting
- On-farm methane digester produces CNG for fleet

NOTABLE ACHIEVEMENT

Ruan has run 62 million miles on CNG since 2011, and reduced total CO₂ emissions by 100 million pounds.

Raymond Corporation
www.raymondcorp.com

Raymond sorts scrap metal to be recycled, and has cut the amount contributed to the landfill per truck by more than half since 2008. The lift truck manufacturer also condenses polyethylene foam and bales bubble wrap so they can be recycled. Internal programs focus on reusing packaging and wood pallets. Raymond has invested time for preparing and recycling of its byproducts, and has 5 employees solely responsible for minimizing the waste stream. In less than 2 years, Raymond saw an ROI on purchasing and regularly maintaining machinery used for these processes.



CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources
- Reuse/recycling program
- Sustainable packaging
- Sustainably source materials

NOTABLE ACHIEVEMENT

Raymond achieved a nearly 56-percent reduction in landfill contribution/truck since 2010, and recycled 97.6 percent of its byproducts. Polyethylene foam volume was compacted by 98.8 percent and recycled, and 100 percent of wood/pallets were recycled or reused.

SAIA LTL Freight
www.saia.com

Five years into a progressive shifting program, Saia's fleet increased to 6.9 MPG, which reduces the volume of diesel fuel consumed by more than 775,000 gallons. In addition, Saia enforces a no-idling policy, installs trailer skirts, and aggressively maintains truck equipment. Other operational changes: testing battery-powered lifts to reduce propane usage and installing LED lighting in terminals.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Through a partnership with Brightery, Saia designed and implemented a solar panel system at its Charlotte, N.C., location that exceeds the entire annual energy consumption requirement for that facility.

South Carolina Ports Authority
www.scspace.com

In 2015, South Carolina Ports Authority (SCPA) donated \$5 million to local land conservation efforts, and is three years into fully implementing a program requiring all trucks entering terminals to have a 1994 or newer engine. With fully electrified ship-to-shore and rubber-tired gantry cranes, SCPA purchases the cleanest equipment available and has reduced gate turn times, truck idling, and fuel consumption. It meets air quality standards 100 percent of the time.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Low truck turn times (avg. 25-26 minutes for single mission) and high crane moves (40-50 moves/hour) significantly reduce emissions.



Rinchem Company
www.rinchem.com

All Rinchem facilities are temperature controlled to exacting specifications. Its late-model facility designs are constructed for the least amount of energy consumption possible. The chemical 3PL uses electronic forklifts/turret trucks with zero emissions in all operations and LED lighting in its DCs. Rinchem has also invested in aerodynamic skirts and tails for its trailer fleet to increase fuel efficiency.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Each year, Rinchem manages the return of 62,500+ drums and totes that are delivered back to semiconductor chemical manufacturers for reconditioning and reuse.

Ryder
www.Ryder.com

Ryder helps companies improve fuel economy and reduce emissions by deploying into its commercial fleets thousands of natural gas vehicles and diesel tractors that include the latest technologies to meet EPA emissions standard. Ryder also partnered with Nikola to be the sole maintenance and distribution provider in North America for their hydrogen fuel cell semi-truck.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting



NOTABLE ACHIEVEMENT

Ryder has achieved 150 million+ miles with its natural gas fleet operations, eliminating 52,904+ MTCO₂e of GHG emissions, displacing approximately 23.1 million gallons of diesel with lower emission domestically produced natural gas.

Schneider
www.schneider.com

Among Schneider's recent green accomplishments, it improved fuel efficiency 11.85 percent since 2008, reduced fuel consumption 4.283 million gallons between 2015 and 2016, reduced CO₂ emissions by 8 percent year over year, and reduced NO_x by 1 percent year over year. Schneider is a charter member of the SmartWay program and has been a SmartWay Excellence Award winner in 2005, 2006, 2007, 2008, 2012, 2015 and 2016.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Schneider is transitioning to the latest clean-diesel emission compliant engines: 95.2 percent of the fleet meets 2010 emissions standards or newer, 65.9 percent meets 2014 standards, 14.2 percent meets 2017 standards.

Schenker
www.dbschenker.com

Schenker sets aggressive carbon emission reduction targets for all transport modes. It uses green energies and technologies, as well as natural gas and electric vehicles.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting
- Hydro cell forklifts in certain areas

NOTABLE ACHIEVEMENT

Schenker offers an online tool that lets shippers calculate emissions based on transportation service.

The Shippers Group
www.shipperswarehouse.com

The Shippers Group has been part of the Texas Emissions Reduction Plan since 2007. The Shippers Group runs a recycle program for dunnage and shrinkwrap. As a SmartWay-certified carrier, The Shippers Group restricts idle times on its trucks to 3 minutes, maximizes cargo space utilization in trailers, and works to eliminate moving empty trailers, which increases carbon emissions.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainable packaging
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The Shippers Group moved high-emissions forklifts out of its fleet, and removed 206 metric tons of non-greenhouse gas emissions.



Saddle Creek Logistics Services
www.sclogistics.com

Since 2012, Saddle Creek has expanded its CNG fleet by nearly 400 percent. Each truck saves about 120,000 lbs. of carbon per year, totaling 21 million+ lbs. annually. The 3PL has replaced more than 13.6 million gallons of diesel with natural gas. Saddle Creek is converting older diesel tractors into dual CNG-diesel fuel vehicles, which will replace as much as 70 percent of the diesel used with natural gas.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

- Automatic tire inflation systems, trailer skirts, aerodynamic mud flaps, and wheel covers

NOTABLE ACHIEVEMENT

In FY 2016, Saddle Creek's fleet of 200 eco-friendly CNG trucks reduced total greenhouse gas emissions by 311 metric tons—equivalent to planting nearly 8,000 trees.

Southeastern Freight Lines
www.sefl.com

SEFL utilizes aerodynamics on its linehaul operations fleet. The carrier purchased automatic and automated manual transmissions in all trucks for the past three years, installed 7+ acres of solar panels at its facilities, and uses motion sensors for facility lighting.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

SEFL improved fuel economy .25 tenths of a gallon based on aerodynamics and other equipment specifications, and avoided 452 metric tons of GHG emissions via recycling.



Swift Transportation
www.swifttrans.com

Swift received a SmartWay Excellence Award for improving freight efficiency and contributing to cleaner air within the supply chain.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Swift Transportation has a long-term record of substantially reducing CO₂ emissions, while at the same time reducing criteria emissions.

TransGroup Global Logistics
www.transgroup.com

TransGroup's external and internal sustainability activities are encompassed in its TransNeutral green program. The 3PL limits greenhouse gas emissions, and offers asset recovery, reverse logistics and end-of-product lifecycle disposition services. Internal company sustainability initiatives include energy conservation, recycling, waste reduction, and paperless operations.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Energy-efficient lighting
- Company-wide paperless initiative

NOTABLE ACHIEVEMENT

TransGroup was the first forwarder to become a SmartWay member in 2007.

Transplace
www.transplace.com

Transplace is committed to helping customers achieve their sustainability goals. The 3PL implemented several supply chain improvement initiatives to help customers reduce their emissions through use of more fuel-efficient transportation modes and the overall reduction in number of shipments needed through consolidation and co-loading arrangements.

CURRENT GREEN INITIATIVES

- Mode conversion and consolidation
- Use of alternative fuels/energy sources

NOTABLE ACHIEVEMENT

Transplace executed 12.8 billion ton miles on carriers registered with the Smartway program in 2016 and procured 96 percent of ton miles for managed transportation business through SmartWay-registered carriers.



Union Pacific Railroad
www.up.com

Railroad is the first asset companies should turn to for optimizing supply chain sustainability. Union Pacific is an integral partner to many industries striving to optimize supply chains, lower costs, achieve significant environmental impact, and accomplish sustainability goals.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Moving freight by rail instead of trucks reduces greenhouse gas emissions by an average of 75 percent.

UPS
www.ups.com

Since 2000, UPS has driven 505 million miles in its alternative fuel and advanced technology vehicles, and is on pace to achieve its goal of 1 billion miles by 2017. In 2015, UPS scored among the top marks for voluntary carbon disclosure by the Climate Disclosure Leadership Index S&P 500. The EPA recognized UPS with the 2015 SmartWay Excellence Award for leadership in environmental and energy efficiency.



CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

The Dow Jones Sustainability World Index selected UPS as a constituent for the third year in a row and included UPS on the North America Index for the 11th year in a row.

Transportation Insight
www.transportationinsight.com

Transportation Insight's technology underpins services that optimize supply chain networks through "what-if" scenarios, historical data and key performance indicators to reduce energy costs, carbon emissions and mileage. The company's Extended LEAN continuous improvement methodology helps companies eliminate waste, and then improve and maintain operational efficiency.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Energy-efficient lighting
- Dozens of associates are Green-Belt Certified and/or certified in Lean Six Sigma for Service.

NOTABLE ACHIEVEMENT

Transportation Insight was a 2016 U.S. EPA SmartWay Excellence Awardee.

U.S. Xpress Enterprises
www.usxpress.com

U.S. Xpress has a 31-year history of consistent innovation, safety, and efficiency in operating its fleet. The carrier has been a SmartWay member since the program's inception and received two SmartWay Excellence Awards. U.S. Xpress worked collaboratively with Freightliner to test and develop the Next Generation Cascadia tractors that are now in its fleet, and is currently working with Nikola Motor Company to test and develop the Nikola One hydrogen/electric Class 8 tractor.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

U.S. Xpress was awarded its second U.S. EPA SmartWay Excellence award in 2016. Year-over-year, 2016 CO₂ emissions decreased approximately 5 percent over 2015 levels.

VersaCold Logistics Services
<http://versacold.com>

VersaCold installed rainwater and defrost condensation collection systems, and reduced flow faucets. The cold chain company improved management and monitoring of storm water, implemented comprehensive recycling programs, and expanded its use of environmentally friendly refrigerants. It replaced standard efficiency motors with premium efficiency motors, and is transitioning toward a paperless office.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

VersaCold retrofitted existing facilities with high-efficiency lighting, roofing and charging systems for its materials handling equipment.



Werner Enterprises/Werner Logistics
www.werner.com

Since becoming the first motor carrier to implement electronic logging devices in 1998, Werner Enterprises has driven more than 17 billion miles with technology that reduces out-of-route miles, saves fuel, and reduces emissions. Werner was selected three times as a SmartWay Excellence Award Winner for its sustainability achievements.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

Since 2007, Werner has saved 180 million+ gallons of diesel fuel and reduced CO₂ emissions by more than 2 million tons.

XPO Logistics
www.xpo.com



XPO Logistics' global practices and technologies seek to maximize energy efficiency, reduce greenhouse gas emissions, and manage trucking and warehousing operations in an environmentally responsible manner. Highlights of the 3PL's green initiatives include a SmarWay-compliant U.S. truck fleet; a European truck fleet that is the largest natural gas fleet in Europe and more than 97 percent compliant with Euro V, EEV, and Euro VI standards; and deployment of advanced packaging technologies to reduce waste and use renewable resources.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reuse/recycling program
- Reduce energy usage
- Sustainable packaging
- Sustainably source materials
- Solar panels
- Energy-efficient lighting
- Network optimization to reduce miles and fuel use

NOTABLE ACHIEVEMENT

XPO continues to expand sustainability efforts, making meaningful progress toward sustainability goals. The French government designated XPO as an "Objectif CO₂" company for outstanding transport environmental performance.

WSI (Warehouse Specialists, LLC)
www.wsinc.com

WSI recycles large amounts of cardboard and dunnage materials, recently installed energy-efficient lighting, and increasingly uses electric forklifts in its facilities. Additionally, green landscaping outside WSI warehouses helps reduce the effects of stormwater runoff and eliminates the need for lawn mowing.

CURRENT GREEN INITIATIVES

- Use alternative fuels/energy sources
- Reuse/recycling program
- Use wastewater
- Reduce energy usage
- Sustainably source materials
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

WSI recycles, reuses, or repurposes nearly 100 percent of its top three facilities' recyclable waste. At its Chicago/Central Wisconsin facilities, WSI reuses nearly 100 percent of pallets.

Yale Materials Handling Corporation
www.yale.com

Forklift provider Yale's lithium-ion battery pack lasts up to five times longer than lead acid options, reducing replacements and landfill waste. Its hydrogen-powered lift trucks offer a 33-percent savings in greenhouse gas emissions compared to lead-acid battery systems. Both technologies produce zero emissions and offer faster, flexible refueling/charging and increased uptime.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Use alternative fuels/energy sources
- Reduce energy usage

NOTABLE ACHIEVEMENT

Yale is one of the largest volume producers of zero-emissions electric lift trucks in North America.

Yusen Logistics (Americas)
www.yusen-logistics.com

In the past five years, Yusen Logistics' green initiatives have eliminated 890+ pounds of CO₂ annually. The 3PL installed LED lights in its Carson, Calif., and Port Murray, N.J., warehouse, which also runs on a solar power generation system. Yusen Logistics utilizes goats instead of gas-consuming machinery to clear brush at its Sumner, Wash., warehouse.

CURRENT GREEN INITIATIVES

- Reduce greenhouse gas emissions
- Reuse/recycling program
- Reduce energy usage
- Solar panels
- Energy-efficient lighting

NOTABLE ACHIEVEMENT

LED lights in Yusen's Carson, Calif., facility will reduce energy use by 1 million kilowatt hours per year and eliminate 309 tons of CO₂ annually.

India and

A night-time photograph of the Singapore Changi Airport Terminal 1. The building's iconic, curved, ribbed roof is illuminated with a warm, reddish-orange glow. Below the roof, the glass facade of the terminal is lit from within, showing the interior structure. A sign on the right side of the building reads "Terminal 1" in a glowing, white font. In the foreground, there are some trees and a blurred blue object, possibly a train or a car, moving across the frame.

Infrastructure improvements—such as investments in Singapore Changi Airport, one of the largest transportation hubs in Southeast Asia—help attract trade to the region.

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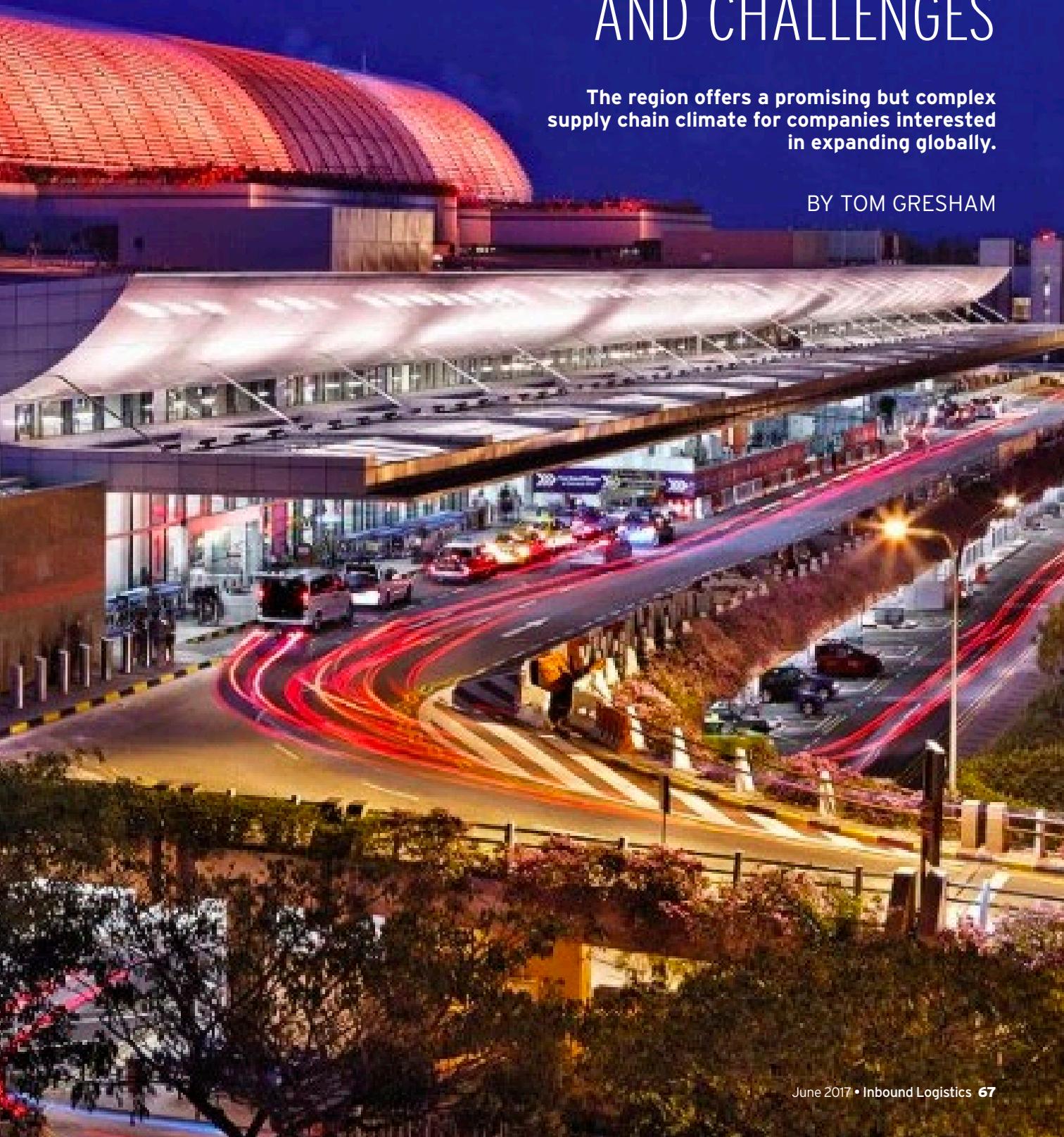
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Southeast Asia

LAND OF OPPORTUNITY— AND CHALLENGES

The region offers a promising but complex supply chain climate for companies interested in expanding globally.

BY TOM GRESHAM



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India and Southeast Asian countries such as Thailand, Singapore, Malaysia, Indonesia, and Taiwan represent a vibrant and tantalizing region for many companies looking to expand and build their global customer bases. In turn, these nations are welcoming interest from abroad, dedicating resources to develop supply chain networks that can sustain industry and encourage rapid growth.

India's stable government, solid infrastructure, and ambitious policy efforts—the government is focused on growing GDP by 8 percent year over year—indicate that the country has “a very bright supply chain future,” says Arun Sharma, manager of global forwarding for third-party logistics provider C.H. Robinson. “Today, India's economy has visible momentum, energy, and optimism.”

India has achieved rapid growth in the services sector, including projections that logistics in the country will exceed \$2 billion by 2019. “This growth underlines India as a land of opportunity for logistics-oriented companies,” says Ravikant Parvataneni, CEO of Crimson & Co. India, a firm that helps companies establish warehousing infrastructure and supply chains.

Southeast Asia's Promise

In Southeast Asia collectively, the economic outlook also appears promising, with estimated economic growth of 4.7 percent in 2017 and 4.8 percent in 2018 for the region, according to the United Nations and Social Commission for Asia and the Pacific.

“The next decade should be exciting for Southeast Asia, as many industries have been focusing on this emerging market,” says Tony Tan, director of global forwarding for C.H. Robinson SE Asia. “As one of the fastest growing regions, and with a large customer base and growing middle class income, Southeast Asia has the potential to become a major supplier region, as well as a market for global economies.”

The region's diversity offers both unique opportunities and complex challenges. “The varying maturity levels of development mean companies must

Finding Partners With Local Knowledge, On-the-ground Resources

For shippers eyeing trade with India and Southeast Asia, understanding the cultural nuances of each country is essential to successfully making inroads.

“Relationships and native language are key to working with local vendors and carriers,” says Tony Tan, director of global forwarding for third-party logistics provider C.H. Robinson SE Asia. “To operate a successful supply chain, shippers must understand cultural background and practice. This is especially true in countries where legal certainty is not as high as it is in developed nations.

“Rather than rely completely on signed contracts, shippers should understand and verify the capabilities of their local partners,” he adds.

Fortunately, a number of global logistics providers and supply chain consultants have established a major presence in the region, offering critical local knowledge. For instance, C.H. Robinson has 420 supply chain experts in India and seven offices in other countries in Southeast Asia, while steadily expanding its footprint. DB Schenker maintains extensive operations in the region, with both deep roots and a growing presence, such as its recent announcement of plans for a logistics center in the Port of Tanjung Pelepas in Malaysia.

In some cases, partnerships with already established companies in the region have been key. For instance, DHL Supply Chain's expansion into India has been an effective one because of its purchase of Bluedart, a top performer in India's logistics market, which has showed “how a global company can tie up with a local company to expand its reach,” says Ravikant Parvataneni, CEO of Crimson & Co. India.

“Bluedart still runs Indian operations efficiently, in a way that is well-integrated into DHL's global operations,” Parvataneni adds.

The region's openness to trade and “agnostic landscape” for e-commerce can lull companies into thinking “that the market's culture will eventually embody universal traits of doing business,” says Norman Mummery, senior vice president, Asia-Pacific logistics/supply chain management for DB Schenker.

“While that may hold true with the tactical systems and processes in the transactions, understanding the distinct ways of doing business in the Asia-Pacific markets can determine the success of how the supply chain fits with the end consumer habits for fulfillment,” Mummery adds. “These are innately acquired traits that come with service providers that have rich and longstanding experiences in the markets they serve.”

Ultimately, says Arun Sharma, manager of global forwarding for C.H. Robinson, it is crucial to be calculating, selective, and adaptable about making an entry into the region. Impatience, imperiousness, or inflexibility can lead to trouble. “It is important to understand local capabilities if a company is to have a successful supply chain.”

calibrate different supply chain strategies to optimally navigate the standards and quality prevalent within the individual markets,” notes Norman Mummery, senior vice president, Asia-Pacific logistics/supply chain management for DB Schenker, a Germany-based logistics provider. “Trade in the region requires

a delicate balancing act, not only to respond quickly to market but also to maintain operational dexterity to suit the regulatory needs of every supply chain stakeholder.”

Infrastructure investment in India and the countries of Southeast India has been robust in the past few years. But

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continuing to build on recent growth will be a critical component of these countries realizing their potential.

Sharma points to major infrastructure developments in India as an encouraging sign. In the past five years, the country has developed road infrastructure and built world-class international airports and seaports. In addition, India has shown a continuing commitment to expand in this area, including a target of nearly \$377 billion earmarked for infrastructure developments in the next three years.

“The government is going all out to provide the necessary infrastructure for companies that want to do business in the country,” Sharma says.

Parvataneni applauds the commitment to improvements, but notes the changes are still “not at the pace we all would have wanted.” In fact, the biggest challenge to growth in India remains “the poor quality of overall supply chain infrastructure,” he says.

Consequently, shippers wading into trade with India must have a strong understanding of regional transportation

networks. Main routes are reliable, “but reaching Tier 2 and Tier 3 cities, and towns beyond the span of the metros, is an onerous task,” Parvataneni says. “Having good regional connectivity is vital to reaching the end customer.”

Bridging the Divide

In fact, across Southeast Asia, the discrepancy between urban and rural can be dramatic, and bridging that divide is essential. “Technology and automation in the large, developed, and dense cities must be able to integrate extensively with the increasingly complex hinterland,” Mummery says.

The infrastructure in Southeast Asia can vary widely among the countries, but the region’s general emphasis is on “developing roads, ports, and airports as a top priority, which is improving capacity and access to support growth,” Tan says.

For instance, Indonesia has increased its national budget for infrastructure spending by nearly 100 percent over 2016. “And its infrastructure investments

are expected to continue increasing in the future,” Tan adds.

For all Southeast Asia countries, “it’s important to understand that transportation plans that work on paper don’t always work in real life,” Tan notes. “Frequent challenges related to natural events can occur. For instance, low tide can affect access to countries that rely on river ports.”

Overall, in the region, “while the usual modes of air and ocean infrastructure are developing well and steadily, there remains further room for development in the road and rail sectors, primarily across the land-bordered countries,” Mummery says.

In India, a highly skilled workforce provides a boost to the logistics sector and offers critical capacity to help support growth. “The country has huge human resources capital—people with great knowledge and skills,” Sharma says.

At the other end of the spectrum, an obstacle to Indonesia’s efforts to improve its supply chain environment and

The advertisement features a central graphic of a road that has become a tangled ball of grey asphalt strips, symbolizing a complex or inefficient distribution network. Surrounding this central image are logos for major retail chains: H-E-B, CVS, Safeway, Target, Kroger, and Walmart. Below the tangled road, the text reads: "Your Retail Distribution Needs Lead To Case Stack". At the bottom of the graphic, the Case Stack logo is displayed with the tagline "Retail Logistics is What We Do!". In the bottom left corner of the graphic, contact information is provided: "consolidation@casestack.com", "1-855-638-3500", and "www.casestack.com".

enable growth is a lack of skilled workers in the logistics field, according to a study conducted by RMIT University in Australia with partners from Indonesia.

“A huge gap” in the supply of skilled logistics workers serves as “a major impediment to the nation’s attempt at lifting its national logistics performance,” the report says.

While Southeast Asia has “divergent levels of worker skills and productivity, aligning corporate expectations and global business practices with local workers’ expectations is an issue,” Tan says.

Ease of Doing Business

A potentially momentous event in the Indian logistics community arrived July 1, 2017 with the implementation of the Goods and Services Tax (GST), a single, common tax for all services across India. The tax replaces what Parvataneni describes as a “plethora of different indirect taxes determined at a local level.” The GST is “a game-changer that will essentially unite India under one common market,” he says.

The new tax will make it easier for shippers to locate their warehouses anywhere in India without worrying about navigating a gauntlet of different taxes that vary among the localities. Establishing the GST will also make it simpler to move goods between states.

“The GST represents a huge opportunity for companies that want to expand their businesses to new markets,” Sharma says.

The GST is coupled with the Make in India initiative, which launched in 2014 to boost manufacturing in the country by facilitating investments, fostering innovation, and enhancing skill development. The initiative has helped spark growth of more than 46 percent in foreign direct investment in the country since its inception.

While India has taken major steps to improve the ease of doing business, Southeast Asia faces challenges in that area. Singapore, and to a lesser extent Malaysia, are exceptions—but in other countries, companies must confront “different policies and procedures for investment licenses, customs formalities, taxation, and free trade zones,” Tan says.

In that environment, paying attention to the details of legal paperwork is necessary. “Shippers should have their import/export code and all required documents and licenses, as well as electronic declarations where possible, in place before they start shipping,” Tan says.

India’s 1.2 billion consumers and countrywide shift toward more online shopping makes it an increasingly popular location for e-commerce. The increase in e-commerce volumes and the addition of new airports have made freight rates more competitive, too.

India remains at “a nascent stage,” Parvataneni says, particularly alongside China, but its relatively young demographic “represents a huge opportunity with lots of potential for growth.”

E-commerce’s rise in Southeast Asia continues to be a massive trend, with multichannel trade at shops and markets gaining popularity. Airport construction has improved direct flight frequency, and motorcycle delivery riders have contributed to capacity for last-mile deliveries in major metro areas.

The aerospace, defense, and railway industries are finding particular success in India. Retail tops the list in Southeast Asia, followed by real estate, finance, technology, and labor-intensive industries.

“Brands with innovative ideas and dynamic characteristics are always a good fit in countries that have a large majority of young people with disposable income,” Tan says. “That is the case in both India and in Southeast Asia.”

Success Stories

For companies with an eye on building their presence in India and Southeast Asia, a number of case studies can serve as guides.

Walmart, for example, employed a partnership with Bharti, an Indian conglomerate, to move adroitly into the Indian retail sector. And efforts by Abercrombie & Fitch, Gucci, Tommy Hilfiger, and Dolce & Gabbana to link up with DLF, a commercial real estate developer, to arrange retail chain stores throughout India is “a huge success story,” Sharma says.

In Southeast Asia, Tan highlights companies such as AEON, the Japan-based retailer that has developed a large presence in Malaysia; Uber, the U.S.-based transportation networking company that has been expanding into Southeast Asia; and Grab, the Singapore-based ride-sharing and logistics services company that has grown throughout the region, for their success navigating the market. ■

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Growing demand for U.S.-made chemicals sparks new opportunities, while aggravating capacity concerns.



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For companies that make or ship chemicals, this is a dynamic era. The ongoing shale gas boom in the United States provides a steady, low-cost supply of raw materials used to manufacture a variety of chemicals. That has made this country a hot spot for chemical production, with demand from markets across the globe.

“The big story is low-cost natural gas liquids creating competitiveness here,” says Glenn Riggs, senior vice president, corporate logistics operations strategy at Odyssey Logistics in Danbury, Connecticut.

In late 2016, chemical production in the United States, not including pharmaceuticals, was expected to grow by 1.6 percent in 2016, by 3.6 percent in 2017, and by 4.8 percent in 2018, according to a report released by the American Chemistry Council (ACC).

As of March 2017, thanks to inexpensive shale gas, companies from around the world had announced plans to construct 294 new production units for chemicals in the United States, says the ACC. Those projects represent \$179 billion in new capital investment.

As production grows, so does logistics activity related to

chemicals. Chemical shipments will increase by 34 percent in the next five years, reaching \$1 trillion by 2020, the ACC estimates.

Cost Affects Capacity

Chemical manufacturers and distributors, along with their logistics partners, keep a careful eye on the price of natural gas and crude oil from U.S. shale fields.

“Those prices tell us the anticipated cost advantage of manufacturing in the United States,” says Nathan Buelt, general manager and coordinator of the Responsible Care program at ChemSolutions, the chemical logistics business of C.H. Robinson in Eden Prairie, Minnesota. As that cost advantage grows or shrinks, so does demand for equipment to move chemical products.

“Is there enough transportation capacity to support additional

production capacity?” Buelt asks. “And if there’s not, where will the gaps be?”

Transportation and logistics companies that serve the chemical industry are working hard to secure enough capacity to serve this booming market. For example, in 2016, Odyssey Logistics acquired Linden Bulk Transportation, a major tank truck carrier based in Linden, New Jersey. One asset that company brings is a bulk liquid depot near the Port of New York and New Jersey.

“We like that for the Panama Canal effect,” says Riggs, referring to shipments arriving on the East Coast through the newly expanded canal.

Odyssey has also enlarged a facility in Shanghai, China, where it serves chemical companies that need to ship small samples of their products to customers.

“Chemical plants aren’t designed to fill pint bottles; they are built to load barges, ships, and rail cars,” Riggs explains. Odyssey stores drums of its customers’ products and then, when an order comes in, fills a pint bottle and ships it with the necessary safety packaging



Asset-based 3PL Rinchem safely and efficiently transports millions of pounds of chemicals, as well as hazardous and non-hazardous materials each year.

and documentation. “We provide that service globally, but there was really a need in our Asia market,” he says. “We had started a couple of years ago in Shanghai, and we recently expanded the service.”

Rinchem, an asset-based third-party logistics (3PL) provider that specializes in chemical and gas supply chains, recently increased its transportation capacity by 36 percent and expanded its warehousing space by 32 percent.

“We have invested more in the past 18 months than we have in the previous 40 years of business, adding new sites in Atlanta, Tainan, Taiwan, and Pyeongtaek, South Korea, expanding in Hillsboro, Oregon, and Neot Hovav, Israel, and adding new gas storage facilities in Tualatin, Oregon, Phoenix, and Manor, Texas,” says Christopher Wright, vice president, sales and marketing at the Albuquerque, New Mexico-based firm.

Rinchem built the Taiwan and South Korea sites mainly to serve semiconductor manufacturers in those nations. Given the proliferation of smart devices connected to the Internet of Things (IoT), demand for microprocessors is growing, spurring greater demand for chemicals used in their manufacturing.

“Those materials make up more than half of our business,” Wright says.

Competing for Equipment and Drivers

While low-cost fossil fuels create conditions that squeeze the transportation infrastructure for chemicals, the industry lives with a strange paradox: higher prices for natural gas and crude oil could make capacity even tighter. When prices for gas and crude rise, production increases in the shale fields. Then, energy companies and chemical companies compete for the same bulk liquid tanks.

“If crude spikes and creates an opportunity, does that capacity move back to oil and gas?” asks Buel. “If it does, what type of gap will that leave for the chemical industry, what are the alternative transportation modes, and what should chemical manufacturers do?”

Besides competing for equipment, the chemical and energy industries compete for qualified drivers. “There’s a structural shortage of drivers in the country, and oil and gas activity increases put pressure on chemical distributors like us, because we scramble to find good drivers to do the job,” says Tim Nicholson, president of PVS Distribution

Group, part of Detroit-based PVS Chemicals, Inc.

PVS Distribution uses a private fleet and common carriers—both over-the-road and rail—in its chemical distribution business. Its PVS Nolwood subsidiary is a full-line chemical distributor that provides custom services and makes many next-day deliveries. Its PVS Minibulk subsidiary installs 500- to 2,000-gallon tanks on customer sites and makes periodic deliveries to keep them filled.

Companies working in the shale fields need trucks to haul not just oil and gas, but also water and chemicals used in hydraulic fracturing. These energy companies and chemical shippers all require drivers with special qualifications. “We need experienced truck drivers with hazmat credentials who know what they’re doing,” Nicholson says.

Companies that ship temperature-sensitive chemicals in less-than-truckload (LTL) quantities face a special capacity challenge these days. “Right now, the chemical industry does not have a temperature-controlled LTL solution,” says Riggs.

The only companies that provided that service, Jevic Transportation and New Century Transportation, have gone out

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of business. For safety reasons, chemical shippers can't share the temperature-controlled equipment used to transport food.

To fill the gap left by the defunct LTL carriers, Odyssey arranges shipments that rely on pool points and crossdocks. "We'll move a larger volume in a full, temperature-controlled truck, and then go to a regional breakout hub and do fast LTL local delivery," Riggs says.

For chemical loads of all types, ChemSolutions sometimes helps its customers overcome the capacity crunch by modifying their supply chains. "We talk to our customers about where their distribution points are," says Buelt. "We discuss whether they have the option to co-manufacture with another facility, or to arrange their network to take better advantage of areas where we believe capacity might

not necessarily be as tight."

Third-party logistics provider Transplace provides capacity for its numerous chemical shippers through a chemical-dedicated fleet, operating exclusively in the Transplace network, that delivers hazmat, tanker-endorsement, TWIC card, and reefer capabilities for temperature control and/or protect from freeze services for water-based chemicals.

Collaborating for Capacity

Bulk liquid chemicals shippers face an ongoing capacity shortage—in terms of both suitable equipment and qualified drivers—so it is critical that they collaborate more effectively with service providers and among themselves.

"If shippers in the marketplace don't collaborate quickly and efficiently with service providers, we will only run into other problems, especially in a contracting driver market," notes Mike Forbes, vice president of logistics solutions at Kenan Advantage Group (KAG) in North Canton, Ohio. KAG provides tank truck transportation and logistics management services for companies that ship fuel, chemicals, industrial gases, and food-grade products.

Collaboration can take many forms. At industry meetings, shippers and service providers have been sharing ideas about how to improve efficiency. Those discussions lead to specific initiatives that might involve several shippers or even several carriers.

For instance, in some cases, KAG and other bulk liquid carriers can establish programs to use each other's facilities to wash out their tanks after deliveries. "Not all carriers have wash stations at every location or key market," Forbes says. Such cooperation helps carriers bring

greater value to their customers.

In other cases, a carrier and shipper might join forces to eliminate empty miles in the supply chain by tying outbound finished product shipments to inbound raw materials. "A lot of best practice sharing and problem solving goes on through these collaborations," Forbes says.

Chemical shippers and their partners also need to think more broadly about their transportation options. "Everyone should continue to look for situations that help shippers eliminate the 'lumpiness' over a delivery week," Forbes says. "We need to consider programs that influence end users to accept loads on broader time tables, versus an '8 a.m. Monday' standard."

In the ongoing quest for greater efficiency in logistics, information technology is continually offering new capabilities. "One is to be able to anticipate and better provide predictability," Forbes says. "More and more, predictive analytics are becoming a component of decision making."



KAG applies strict safety and security measures to its chemical services, and offers guaranteed capacity to meet shippers' needs.

"In the past, what we called 'real-time data' wasn't actually real time; it had a lag to it in most situations," Forbes says. "Now, some of the applications collect and share data in actual real time. You can make predictions from that data, to make changes and anticipate different scenarios, which makes all parts of the supply chain more efficient and lean."

New mobile apps for operations, sales, and customer service also deliver benefits for chemical shippers and their transportation partners.

"For example, they let drivers provide more timely information about the shipments or unplanned events that could impact cost and service," Forbes says. "Mobility also extends sales and customer service activity any time, anywhere."



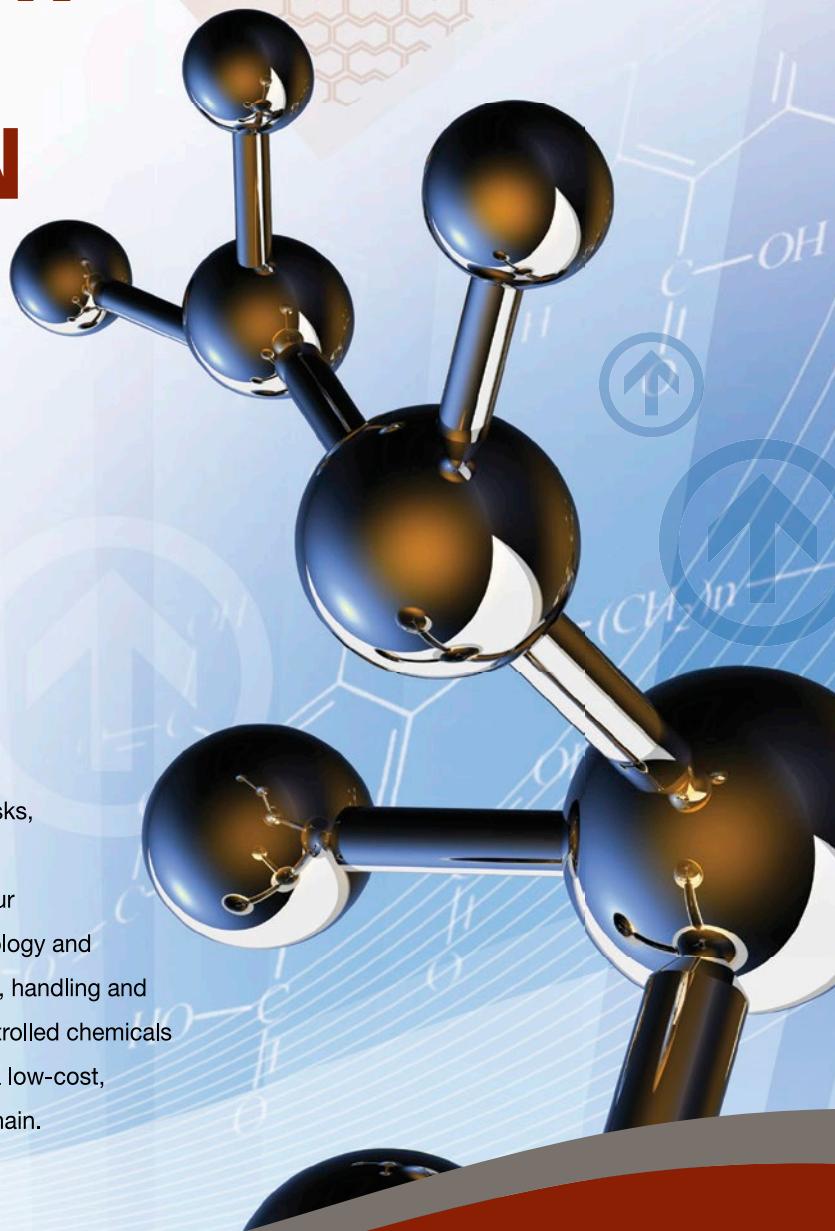
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Safe and Sound

While capacity concerns wax and wane, another challenge for chemical shippers remains constant. "Safety is the most important aspect of our business," says Wright. "Without safety as a core principle, we're not able to be in business."

Safety is always top-of-mind for chemical shippers and their logistics partners, but the subject has gained even greater

worldwide attention since a series of explosions ripped through a storage facility in Tianjin, China, in August 2015.

"That incident further raised awareness of controls and safety in China, as a developing industrial country," Riggs says.

Shortly after the Tianjin disaster, Rinchem hosted a delegation from China that came to the United States to benchmark regulations and best practices. Conversations with the visitors made clear that while safety regulations in China and the United States are similar, compliance is a problem in China.

"You can have all the regulations in the world, but without strict compliance, people are going to be in danger," Wright says.

To encourage compliance at its own facilities, Rinchem has created a safety team at each site. "They meet regularly to talk about things

they're seeing and how they can improve safety," Wright says. "We've also instituted a zero tolerance policy for unsafe behavior."

The Tianjin explosions and other incidents have prompted the U.S. government to tighten both the design and the application of safety and security rules that govern the transportation and storage of chemicals. "Working with regulatory bodies to stay permitted and navigate the changing regulations becomes a lot of work," Wright says.

The Outsourcing Option

For some chemical companies, the most convenient solution is to outsource functions such as storage to a logistics partner that understands all the ins and outs of compliance.

Increasingly tight safety and security regulations have prompted a trend toward more outsourcing

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Flexibility Key to Managing 'Nick-of-Time' Demand

Given the nature of the materials, chemical logistics partners must often provide services that go beyond transportation and storage. Logistics partners serving the chemical industry may offer a variety of value-added services. At Linden Warehouse and Distribution Co., Inc. in Linden, New Jersey, for example, packaging is an important extra.

"We offer one-stop shopping for liquid packaging and fulfillment," says Jared Stadlin, vice president-client services at Linden. "Our automated filling line can fill everything from 2.5-gallon containers to totes or IBCs [intermediate bulk containers] of 250 gallons."

Linden operates approximately 1.2 million square feet of public warehouse space in Linden and Edison, New Jersey. In addition to its packaging capabilities, the company receives, inspects, and stores inbound product for clients and manages distribution to end customers.

Chemical Specialists

Although Linden works with a variety of general commodities and retail products, chemical shippers make up a large part of its customer base. Its facilities include specialized space for materials that require temperature-controlled or flammable liquid storage, plus food-grade buildings for storing chemicals used to produce cosmetics or pharmaceuticals.

In the packaging operation, Linden works closely with local bulk carriers to transfer chemicals from tank trucks or intermodal bulk containers into pails, drums, or totes. "We conduct the filling operation on computer-controlled filling lines with integrated calibrated scales, which ensures the drums, totes, and pails consistently reach the desired fill weight," Stadlin says. Linden can also transfer liquids from drums or totes back into larger containers, tank



At Linden, all equipment and trailers undergo stringent inspections and mandatory vehicle condition reports to ensure they can deliver for customers.

trucks, or ISO containers.

Because Linden's warehouses are close to the Port of New York and New Jersey, which is preparing to receive larger ships that arrive through the newly expanded Panama Canal, Stadlin expects to soon start handling greater volumes of incoming freight. "More containers will be unloaded in a defined time frame," Stadlin says.

That increased inbound volume will compound the pressure that warehouse-based 3PLs feel today from customers that want to maintain as little on-hand inventory as possible. "Companies used to operate just in time," Stadlin says. "Often now it feels like we are shipping materials just in the nick of time."

The desire to maintain a continuous flow of product exactly when needed, while managing larger inbound volumes, means that shippers of all kinds need to operate with greater versatility and flexibility. But chemical shippers and their partners must become especially smart to succeed in this environment.

"Companies handling hazardous chemicals have a smaller universe of carriers available to ship them. So they have more scheduling challenges,"

Stadlin says. "They have to be adept at working with transportation management systems, SAP, or other enterprise resource planning systems while leveraging good relationships with carriers, to ensure materials are tendered and on the road on time.

"At Linden, we use all the tools at our disposal to satisfy our customers' needs," he adds.

Ready and Able

It is also critical to have a well-trained staff. "Linden provides hazmat and GMP (Good Manufacturing Practice) training to our customer service and operations colleagues so we're able to prepare the shipping paperwork, offer placards, and communicate intelligently with carriers," Stadlin says.

In addition, shippers or their 3PLs must know how to comply with labeling requirements. "When working in an abbreviated delivery window, shippers and 3PLs have to make sure they deal with a provider that has the knowledge and resources to inspect the material, and make sure it is properly labeled and ready for shipment in the desired timeframe," Stadlin says.

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among chemical manufacturers and their customers. "They have to make a choice between investing in their manufacturing process and product development, or dealing with all the regulations, including the infrastructure and training," Wright says.

Companies that belong to the ACC participate in its Responsible Care safety initiative, following guidelines designed to enhance safety, security, and environmental responsibility. Since 1990, Responsible Care companies have reduced their rates of recordable injury and illness by 79 percent, according to the ACC.

Companies that participate in Responsible Care go through an audit every three years to certify their compliance. "All of our business units that touch chemicals are part of that certification," says Riggs. "It's about a two-week audit across four or five different sites."

The rigorous process is designed to ensure that the company has all the correct management programs and controls in place. "First, the auditors read the documentation on our procedures, and our manuals," Riggs explains. "They look for evidence that we're following those procedures, and they audit our records for evidence

that we're doing what we say we're doing." Odyssey earned recertification in October 2016.

The Responsible Care program recently recognized ChemSolutions for outstanding performance. "I received the American Chemistry Council's partner company Employee of the Year award in 2016," Buelt says.

At PVS Distribution Group, the commitment to safety extends beyond the company's four walls, into its relationships with trading partners. "One challenge is educating our customer base, and sometimes suppliers, on how important safety is," Nicholson notes.

Sometimes a partner will

Keeping a Close Eye on the Market

Because conditions that govern transportation pricing and capacity fluctuate constantly, chemical shippers and their logistics partners need to stay attentive to those ups and downs, says Mike Challman, vice president of North American Operations at CLX Logistics in Philadelphia.

Through its ChemLogix division, CLX helps chemical shippers with services such as freight procurement, intermodal transportation, international logistics, rail fleet management, and more. It also offers a multi-modal, cloud-based transportation management system (TMS). New services include several "virtual" dedicated fleets that CLX operates for some chemical shippers, where bulk carriers provide capacity, but committed to a specific customer for an extended time.

Among the trends that chemical shippers need to watch is the price of fuel, which is slowly rising. "Prices are still well below the peaks of a few years ago, but it seems the bottom has been reached and shippers can

expect steady increases to continue over the next few years," Challman predicts.

Freight rates are rising as well. "The pricing market was very favorable for shippers in recent years, but the pendulum is swinging back toward carriers now," Challman says. "Shippers need to keep a close eye on rates."

The driver shortage isn't as severe as some observers were predicting a few years ago, Challman says, but the aging of the driver pool could push some smaller carriers out of business. So might the federal rule requiring most motor carriers to install electronic logging devices (ELDs) on their trucks by December 2017. "While nearly all large carriers have already met the mandate, we are beginning to see some impact on small fleets and owner-operators who have not made the switch yet," Challman says.

Trucking companies and their customers could get some regulatory relief from the current presidential administration, which has been slowing the pace of regulatory

change, Challman says. "This trend is likely to continue, which may be generally positive but still contributes to some degree of uncertainty in the market—and uncertainty is generally not great for shippers," he notes.

Whatever the current trend, capacity will never be plentiful, Challman warns. "Shippers need to keep an eye on market conditions and look for opportunities to shift transportation modes—for example, switching from tank truck on road to ISO tank on rail," he says.

As CLX monitors those trends on behalf of customers, it is also taking steps to keep shippers' supply chains as efficient as possible in all market conditions. One recent initiative involves technology for monitoring loads. "We have been working with some shippers to install GPS tracking devices on company-owned bulk trailers," Challman explains. "This capability provides much improved real-time information about the location of both loaded and empty trailers, which is beneficial to both shippers and their customers."

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ask PVS to take an action the distributor doesn't consider safe, such as using an inappropriate fitting when delivering a product. "We have very strict rules here about what type of fittings we use, and what type of material construction is at the customer site for our chemicals—because different chemicals react with different types of metals, for example."

Before PVS makes its first delivery to a customer, it conducts a thorough assessment of the delivery site. "Sometimes those site assessments fail," Nicholson says. "A lot of our energy goes into educating customers and helping them achieve our safety standards so we can safely deliver."

New information technology helps to make those assessments more effective. "Site assessments used to be done with a piece of paper, today we can do them with an iPad," Nicholson says. "We take pictures and videos and get into the weeds on what a site looks like before we deliver there."

This is especially helpful in the eastern half of the United States, he says, where facilities often include tight spaces in older buildings.

Transplace is also committed to safety, establishing safety measures with its proactive tracking alerts triggered by status updates or EDI reason codes. The 3PL has also implemented a tracking portal that allows it to monitor hazmat shipments across all customers.

Mastering the Data

Along with striving for maximum safety, companies that ship chemicals—like most shippers—continuously look for ways to make their supply chains more efficient. One strategy that's especially important in the chemical industry, according



Rinchem's warehouses are designed for safe and efficient chemical storage and handling.

to Buelt, is to improve the management of master data.

Master data is the information a company keeps about each of the products it handles. It includes specifications that are needed to complete a safety data sheet (SDS), which outlines the health and safety hazards the material might pose and explains how to handle the chemical safely. For bulk chemicals, master data might also include details about the kinds of pumps, hoses, trailers, and other equipment needed to pick it up and deliver it.

"If that information is missing and you need two or three phone calls to confirm, or you have old data, in the worst case you expose yourself to some risk if you show up to load or unload with improper equipment," says Buelt.

But even if the worst doesn't happen, incomplete or erroneous master data can waste a lot of time, as employees chase down the information they need to move a shipment.

Some chemical shippers have invested in sophisticated

information technology to help manage their master data, while others have not. ChemSolutions can lend support through C.H. Robinson's *Navisphere*, its proprietary transportation management system.

"One component of our master data management captures shipper requirements, hard codes them, and then puts in a change management system that determines, if requirements were to change, what steps we need to take to update our system," Buelt says.

Transplace also has made several recent investments in information technology to provide better service to shippers. Some improvements include integrating and collaborating with real-time visibility solutions providers to enhance shipment track-and-trace capabilities on chemical shipments at any time, including high hazmat (poison inhalation hazard, chemical precursors) loads.

Transplace's business intelligence and data visualization tools enable customers to quickly see trends and shifts—and allows for a more informed decision-making process.

Can You See Me Now?

Offering real-time visibility enhancements helps Transplace customers know precisely where their critical freight is at any moment in time. Proactive shipment lifecycle monitoring with automated cadenced status distribution to customers' organizations allows the 3PL to aggressively manage customers' service performance expectations on each in-motion shipment.

As demand for chemicals continues to grow, shippers will need to work hard on all fronts—to secure capacity, keep supply chains safe and secure, and to operate at optimal efficiency. ■



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By Sandra Beckwith

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When Christine Reinelt left the workforce temporarily to stay home with her two young children, she decided to use her break from paid employment to further her supply chain education. Her home in western New York isn't near an academic institution offering the instruction she wanted, so Reinelt searched for online education options. She was particularly interested in enrolling in a program that was well known among employers for providing solid supply chain education.

She found it at Pennsylvania State University, where she could ease back into the academic world by starting with the online graduate certificate in supply chain management program, a 12-credit hour program that feeds into the school's master in professional studies in supply chain management degree program.

After excelling in the program, Reinelt applied her certificate course credits to the master's program and continued on for a second year to earn a graduate degree. Now a business analyst at GE Transportation in Erie, Pennsylvania, through a contract with Paradigm Infotech Inc., Reinelt says the two-year certificate and masters program gave her the confidence she needed when she re-entered the job market after her children started school.

"I wasn't exposed to global markets in my previous position, but I am now at GE," Reinelt says. "The Penn State

program prepared me for that."

Just as important are the unanticipated benefits she reaped through learning online.

"I didn't expect much teamwork and communication in an online learning environment, but I was wrong," Reinelt says. "All of it helped me become a more effective team member and collaborator. It also helped me develop analytical skills and become a more strategic thinker."

Degree Options

Online supply chain education is flourishing, with options ranging from one-off courses to certification programs to master's degrees. The best option for any individual depends on career goals.

Looking for a deep dive into a specific topic—for example, performance measures for supply chain management? Take one or two courses, and maybe earn a certificate—which isn't the same as obtaining certification. Want to boost your resume and make yourself more attractive to the job market? Enroll in a reputable certification program. Interested in moving into management? Invest in a master's degree where you will learn more about the role of multiple disciplines, from finance to marketing, in supply chain management. Each education type serves a different purpose.

Organizations including the Institute for Supply Management (ISM), the

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Christine Reinelt earned both a certificate and a master's degree online at Penn State University.

"I didn't expect much teamwork and communication in an online learning environment, but I was wrong...All of it helped me become a more effective team member and collaborator. It also helped me develop analytical skills and become a more strategic thinker."

Council of Supply Chain Management Professionals (CSCMP), and APICS, say their certification through online education options demonstrate subject knowledge and career commitment. The ISM website, for example, notes that its certification tells hiring companies that employees or job candidates have "mastered critical skills and can apply them to real-world situations to achieve superior outcomes."

"Certification says something about the people who earn it," says Nichole Mumford, director of education programs and marketing communication for CSCMP, a global association for supply chain management professionals. "Employers look for these kinds of credentials."

Pat Woods, founder of SupplyChainEducation.com, which offers online training for APICS and ISM certification exams, agrees. He compares certification to a master's degree: "With certification, students learn technology and gain knowledge that's directly applicable to their jobs. Sometimes a master's program can be higher level."

In some cases, he adds, employers place more value on certification than they do on a graduate degree.

Then there's the additional money that comes with certification: Average salaries for certified supply chain professionals were 10.3 percent higher than for those without certification, according to ISM's 2017 Salary Survey.

Employers funding higher education also appreciate that online certification training is less expensive than a graduate degree, Woods adds.

Still, when combined, all three of CSCMP's SCPPro certifications demonstrate a mastery of knowledge and skills similar to a master's level program. "We compare it to preparing for a bar exam or CPA testing," Mumford says.

The certificate-followed-by-master's-degree hybrid program that Reinelt enrolled in serves both needs.

"We were surprised by the interest in the certificate program," says David Huff, director of online graduate programs in supply chain management and a professor at Penn State. "It lets those with some experience move forward without getting a master's degree."

"It's the foundation, so it's more accessible," he adds. "The last 18 credits are more rigorous."

More than half of certificate program students apply to the master's program.

Master's Programs Develop Leaders

One difference between online education for certifications and a master's degree is the leadership skills master's degree students develop.

"Any good supply chain master's program offers the teamwork that helps students develop leadership skills," says Huff. "For instance, our students learn how to work long distance and

coordinate with teammates around the globe, all while working around their existing job commitments."

Penn State students, who also meet in person for four days during the summer after the first year, typically take one to two courses per semester and participate in three to five team projects—usually a case study—per course.

"They learn how to apply all this knowledge to their companies, and it gives them the skills to recognize opportunities and act on them," says Huff.

Tony Saracino, market development manager for the building solutions team at chemicals company BASF in northern California, is working toward an online MBA with a concentration in global supply chain management through the University of North Carolina (UNC). His coursework helps him understand other corporate functions and how they relate to his position and responsibilities.

"It's extremely important to understand other functions and speak their language, otherwise you risk making decisions in a vacuum and getting frustrated," he says.

He particularly enjoys UNC's live—"synchronous"—instruction because of the interaction with students and instructors and the opportunity to ask questions. "You can learn from someone who works at Boeing, 3M, or Procter & Gamble, who brings their own stories and experiences into the learning process," he says.

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An Indiana University student attends an online supply chain management class.

This interaction brings with it an unexpected skill: learning how to use online technology.

“When students enroll in a program like this, they’re thinking more about content than technology, but from a process perspective, that’s a big take-away,” says Wendell Gilland, associate professor of operations at UNC Kenan-Flagler Business School.

The program also requires a great deal of document sharing, video conferencing, and accessing material in a technology-focused learning management system. “Students also get comfortable being on camera,” adds Saracino.

Working Through Problems

It’s a similar experience at Indiana University (IU), which offers an online MBA in Supply Chain and Operations and a Master of Science in Global Supply Chain Management. The same faculty teaches both online and classroom courses, but online students have the benefit of learning how to work through problems that come naturally when collaborating with teammates in different time zones and in varying environments.

“Nobody is the boss in that situation—it’s the optimal example of a matrix organization,” says Carl Briggs, clinical professor, operations and decision technologies. “It’s a group of people pushed close to the edge of what they

can deliver and it’s all virtual—you can’t just walk across the hall and talk to your teammate. This gives these students a huge advantage in today’s virtual global workplace.”

Students are exposed to even more when they decide for themselves which technology tools to use, according to IU Senior Lecturer Scott Dobos, who went through the online Master of Science program while employed at Pratt & Whitney before joining the faculty.

“The students don’t want our structure,” he says. “They figure out what works best for them. That offers another benefit—team members introduce each other to new tools they’re using in their workplaces.”

The Personal Touch

While Dobos appreciated the flexibility of online education when he was an IU graduate degree student, he particularly enjoyed the one-week in-person immersion program that starts the masters programs. “Meeting the instructors and my peers in person was valuable,” he notes.

As an instructor today, he has seen how improved technology, including video conferencing, helps provide a more personalized online experience for students than he had. “When I can see their video feed and the expressions on their faces, I’m better at figuring out what’s going on and the experience they are having,” he says.

While faculty and students alike stress the value and flexibility of online degree programs taught by renowned faculty members, some naysayers continue to question the quality.

When someone tells Saracino that an online degree can’t be as good as an in-person MBA, he has a response ready: “At my job, I work with people all over the world. We meet on the phone and via videoconferences rather than flying to meet in person every time we need to connect—just like we do in my course work.

“My education is providing the skills I need to function in a global economy,” he says. “I wouldn’t have the same experience sitting in a classroom for two years.”

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Monday, July 10

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Saturday, July 15

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Monday, July 17

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Monday, July 24

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Monday, July 31

Ethics in Transportation Brokerage

October

Monday, October 2

Temperature Control Transport

Monday, October 9

Partnership Selling in the Supply Chain

Monday, October 16

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Submissions must be received by July 10th, 2017. One winner will be awarded the scholarship in September 2017, and will be featured in a future issue. Send submissions to editor@inboundlogistics.com

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This material is based upon work supported by the National Science Foundation under Grant No. 1400452.

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Casebook | by Elaine S. Silver

Supply Chain Change: Getting Employees on Board

How does a global company become more nimble and streamlined? For Agilent Technologies, a high-tech life sciences, diagnostics, and applied chemical company with more than 12,500 employees operating across three continents, it meant merging three separate supply lines and creating one global supply chain to speed product flow to customers. The most crucial step was educating employees and getting them on board.

The first step in Agilent's supply chain restructuring strategy was encouraging employee buy-in and feedback through a training and educational platform.

Integrating the supply chain was not easy, given the complexities and specificity of the range of Agilent's products. The Santa Clara, California-based company provides everything from measurement systems for detecting chemical, viral, bacteria, or microbiological contaminants to instruments that analyze and verify evidence at trials. Its customers are laboratories worldwide in six major markets: pharmaceutical, food, environmental and forensics, diagnostics, chemical and energy, and research.

The company started its supply chain overhaul in 2014. The first step:

Spreading the word. Henrik Ancher-Jensen, president of Agilent Order Fulfillment and Supply Chain (OFS), and his team embarked on a four-month global tour to talk to Agilent's community. They held town-hall meetings to discuss the company's new unified global supply chain strategy, dubbed Power of One.

"We structured the new organization around centers of excellence, which allowed us to introduce new products and leverage existing global processes, tools, and practices in an impactful way," explains Lars Kristiansen, director, head of strategy and continuous improvement for Agilent



Agilent provides sophisticated products to laboratories worldwide. Partnering with a strategic activation company to encourage employee buy-in reduced the time it took to launch new supply chain initiatives by 83 percent.

Technologies. “We knew that training and communicating the strategy to the OFS organization was key for success in execution and buy in.”

In fall 2015, Agilent began working for the first time with CorpU, a Philadelphia-based strategy activation company that provides online courses to educate and immerse employees in new strategies, and gather their feedback.

By using the CorpU platform—and its precision tools, procedures, and metrics for both engaging and educating employees—Agilent was able to cut the time to transition from design to implementation for new supply chain strategies from months to just 10 days.

Supply Chain Sprints

Supply chain programs or “sprints” form the core of CorpU’s curriculum. “We start the strategy sprint with top management from around the world,” explains Alan Todd, founder and CEO of CorpU. “The purpose of the sprint is to accelerate new strategies and change initiatives at scale.

“The sprint works like an online course that each member of the group works on for 30 minutes daily,” he says. “They have information to watch and read. And, they engage in

a conversation as we teach them the Power of One strategy.

“The sprint gets people to engage in a dialogue across silos,” Todd adds. “Through that dialogue, we move from vision to shared vision. The mistake that many companies make when changing strategy is that they don’t engage their people.”

The sprints let groups of Agilent employees gain a fresh end-to-end perspective and share methods to improve planning and forecasting, optimize inventory levels, increase supply chain transparency, and use data to derive insights into customer needs.

CorpU follows up the strategy sprints for department heads and managers with learning sprints for a broader range of employees. Agilent’s first course for employees took 10 days, 30 minutes each day, and centered on building skills and teaching the theories and framework of the new supply chain systems.

“We get hundreds of people talking about what the new strategy means to them and their part of the business, and we identify obstacles or why they are excited about one aspect and not another. Then, we can derive best practices from these discussions,” says Todd.

“We provide a lot of feedback to the participants and the sponsor. We are able to see where people are engaged and where they connected.”

Subsequent strategy sprints are shorter, just five days, and are used for Agilent’s strategy status updates, creating a window into how new procedures and ideas are being enacted.

CorpU studies show that when leadership and management get attached to the shared vision, their enthusiasm rubs off on their associates.

“For a large-scale change to work in a supply chain, you need to build a volunteer army,” Todd says. “Teams come to the conclusion on their own that they are committed to the new vision. They are part of the strategy, we asked for their thoughts and feedback, and we addressed their suggestions.”

Employee Commitment

Employees are asked to commit to taking action and to implement the new strategy in their part of the business. They also participate in idea tournaments.

“Employees go from a lot of ideas to a few great ideas,” says Todd. “Then they get to test the payoff for these ideas and decide how to implement them. The process is interactive and fun, and it raises the level of engagement.”

The platform also lets employees feel heard. “We create an opportunity for each person to contribute their voice. Then management says, ‘I heard you, you have identified some obstacles and here is what we will do about them.’ You can’t believe how powerful that is,” says Todd.

Evaluating management and employee involvement is not left to chance or gut feelings. With the scientific rigor of one of Agilent’s own diagnostic tools, the discourse in the strategy and learning sprints is run through CorpU’s natural language processing analytics, a suite of machine learning algorithms that examine and analyze structured dialogue.

Reports from the analysis provide

Agilent with a kind of X-ray vision into how its employees understand and think about the organizational changes. “The platform allowed OFS management to have visibility into employee-contributed ideas, challenges, and questions, so they were better able to address employee concerns,” says Kristiansen.

“We can see positive or negative language use through sentiment analysis,” Todd says. “Then, as we get deeper into the discussion through analyzing the language people use, we look to see if they are using the new strategy’s language. Sometimes management thinks their people are won over, but they are not. We can pinpoint that. Or we can see that some are leaning in while others are not. We help give management early warning alerts.”

Initial results from Agilent’s internal staff survey show that 94 percent of the OFS organization understand and

support the new strategy and know how they personally contribute to it.

“The main gain of using the CorpU approach is receiving employee comments such as: ‘It’s in our blood now and our decisions are inspired and aligned toward the OFS Power of One strategy,’ and ‘I strongly believe in our future strategy. The journey we are on will give us a victory in the market,’” Kristiansen says.

“Everyone in the organization knows how they contribute to business performance and how they are accountable and responsible,” he adds. “This is also reflected in personal performance plans.”

Staying on Track

Agilent continues to work with CorpU as it rolls out its three-year supply chain integration plan. Using the CorpU tools has resulted in an 83-percent reduction in the time it takes to launch strategic initiatives.

“Longer term, it is important to have an organization that can adapt quickly to business changes and compliance requirements,” Kristiansen says. “Over time, this model has ensured continual employee engagement, enabling management to refine the strategy, adjust direction, and make decisions faster where necessary. We recognize that this journey will only be successful with the right strategy, clearly communicated through continual employee engagement, understanding, and dialogue.”

Agilent’s sophisticated product array requires equally sophisticated supply chain methods. “Our ability to execute faster, better, and smarter has led to being ahead of schedule on our current plans; all our major strategic products are more than 85 percent on track,” Kristiansen says. “Ensuring effective strategy execution across the entire company is crucial.” ■



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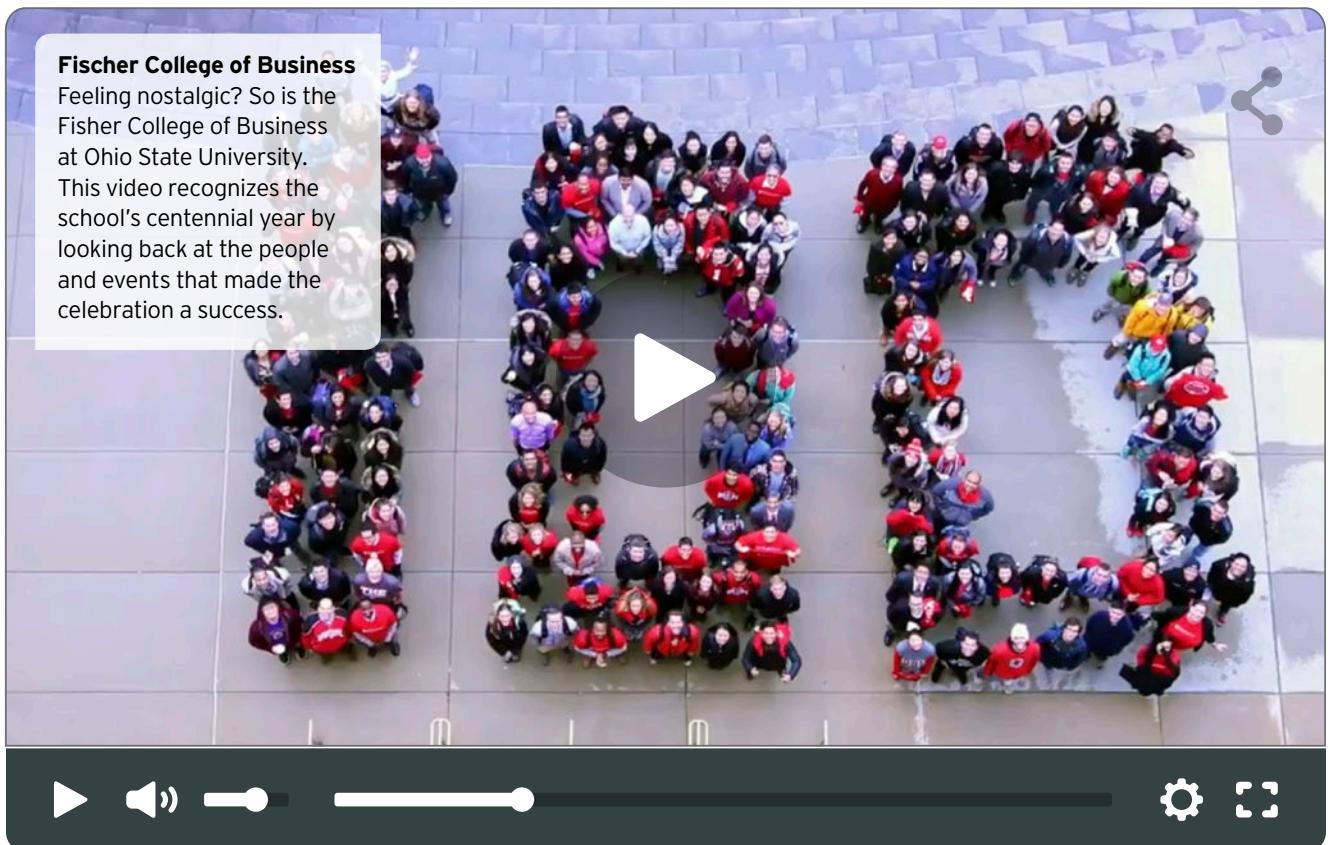
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What is Logistics All About?

bit.ly/UoAAAnchorage

University of Alaska Anchorage

Logistics and supply chain management are intimately related, according to Dr. Darren Prokop, professor of logistics at the University of Alaska's College of Business and Public Policy. In this video, he explains the symbiotic relationship between the two functions this way: Supply chain is the structure, the skeleton, and logistics is the flow of blood and oxygen that gives vitality to that structure. See why you can't have one without the other in this educative video.



Chip Off the Old Blockchain

bit.ly/IBMThinkAcademy

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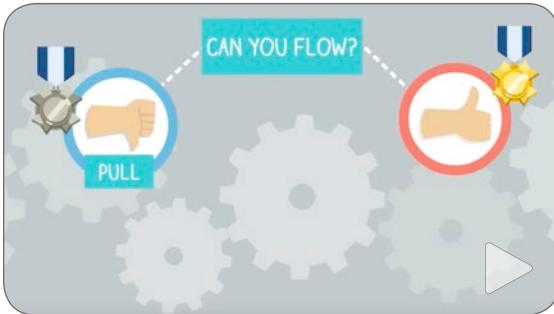
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Western Illinois University

Slap on a nametag and check out Supply Chain Management Day, hosted by Western Illinois University. Activities include informal meet-and-greet opportunities with corporate employers, a chance for high school students to learn more about the field, and presentations by many industry leaders about possible career and internship opportunities. This program continues to grow every year as supply chain management becomes an attractive career choice because it changes the way businesses run.



Pull, Push, Flow

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Tap into LeanCor's expertise in lean supply chains and operational excellence with this video. *Lean Six Sigma Material Flow: What is Pull*, an excerpt from LeanCor's Online Lean Six Sigma Green Belt Course, explains the rule of thumb when it comes to production and/or fulfillment material flow. It can also help you determine when to push, pull, and flow.

Raising the Bar on Supply Chain Management

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Sometimes we get so focused on our jobs that we lose sight of the bigger picture. APICS reminds us that supply chain management is about more than raw materials and finished products; it's about giving children the chance to connect with the world. It's about more than finding the fastest routes; it's about getting fresh water to where it's needed most. It's about more than saving time; it's about saving the planet. It's about more than supply and demand; it's about demanding more from the supply chain. Supply chain professionals have the power to change the world and APICS helps make that happen. See how in this video.



Riddle Me This

bit.ly/Embry_Riddle

Embry Riddle

Embry Riddle's Master of Science in Logistics and Supply Chain Management program is designed to equip students with the knowledge, strategy, and tools to solve real-world problems. A solid mix of courses prepares them well at all functioning levels. In this video, you'll meet students who discuss why they chose Embry Riddle, and you'll learn the three factors that differentiate this program from others.

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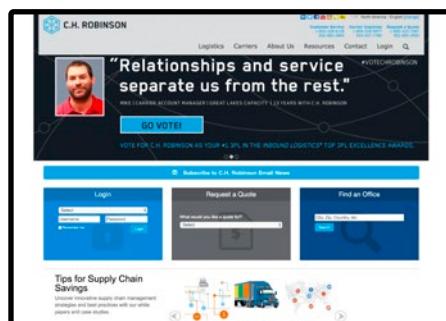
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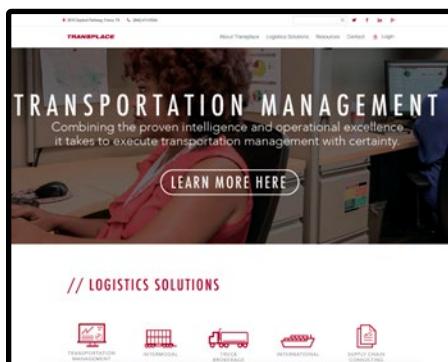
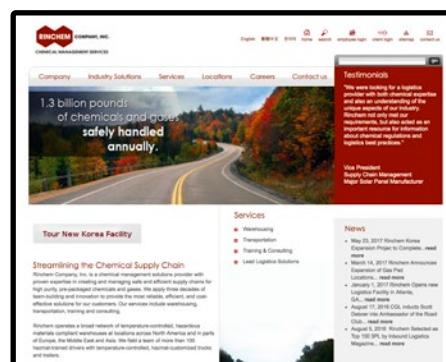


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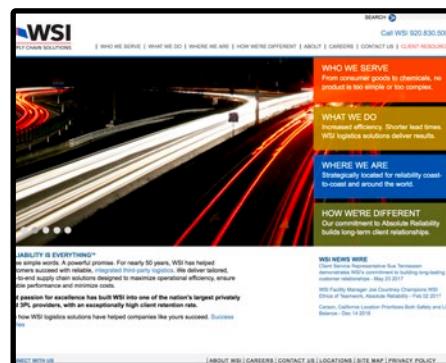


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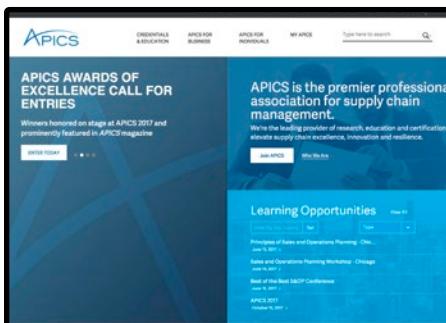
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EDUCATION



APICS • www.apics.org

Supply chain management never stops advancing—and neither should supply chain professionals or their organizations. APICS helps develop supply chain talent and elevate end-to-end supply chain performance. From education and certification to benchmarking and best practices, APICS sets the industry standard. Together with its members, partners and customers, APICS is united in its commitment to global supply chain excellence, innovation and resilience—achieved one person and one supply chain at a time.

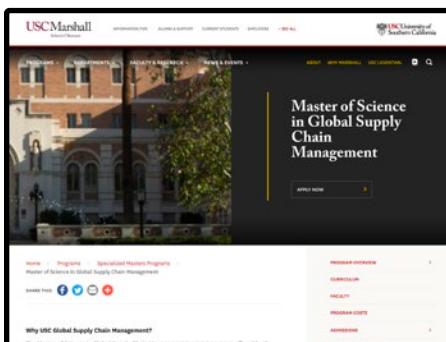
Transportation Intermediaries Association (TIA) • www.tianet.com

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



USC Marshall • www.marshall.usc.edu/msgscm

Ranked as the #1 Online Master's program in Supply Chain Management according to BestColleges.com, the USC Master's program combines a world-class academic foundation in supply chain management with real-world applications through live projects for leading companies and international and domestic experiential trips. Our executive online and on-campus program prepares you to be the next leader in the ever-growing field of supply chain. Our holistic approach connects our students with the world through Network, Education, and Advanced Research (NEAR).



EXPEDITED AIR

ArcBest • www.arcb.com

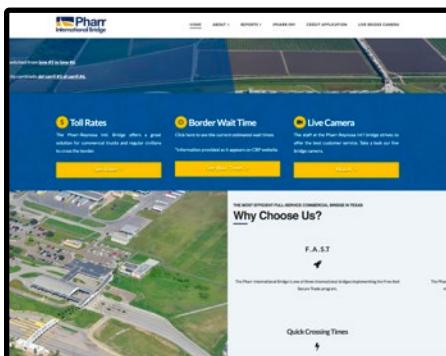
"We'll Find a Way" is a testament to what our customers say about us. We say "yes" more often; we're the kind of company that partners with them to problem-solve and make things happen. In short, we do the hard things well. We'll Find a Way - has some grit to it; it speaks to the can-do attitude and relentless will of our people to get things done. It represents the heart and soul of the ArcBest family. When others say, "We can't," ArcBest companies find a way.



IN THIS SECTION:

Global Trade - Retail Logistics

GLOBAL TRADE



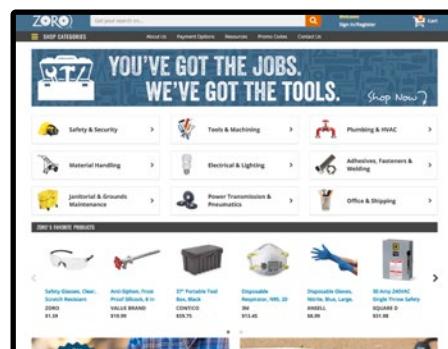
Pharr Bridge • www.pharrbridge.com

The Pharr-Reynosa International Bridge serves as one of the most important ports of entry for the U.S.-Mexico border. It handles both commercial and passenger-operated vehicles and crosses about 175,000 vehicles monthly. The Pharr International Bridge is also the only commercial bridge crossing in Hidalgo County, and is the number two bridge in the country for crossing of fruits and vegetables. The Pharr International Bridge connects US Hwy. 281/I-69W to the City of Reynosa, Tamaulipas, the fastest growing city in Mexico.

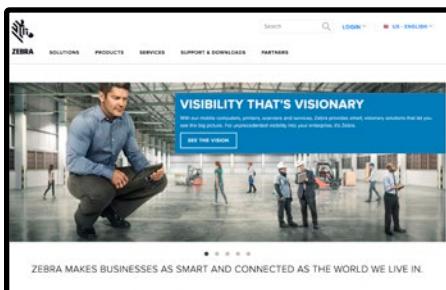
INDUSTRIAL SUPPLY PRODUCTS

Zoro Tools • www.zoro.com

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Zebra Technologies • www.zebra.com

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RETAIL LOGISTICS

Performance Team • www.performanceteam.net

Performance Team (PT) is an industry-leading third-party logistics company with nearly 30 years of experience in warehousing, distribution, consolidation, and transportation. PT has 12 domestic hubs (and nearly 7 million square feet of space) strategically located near major ports, interstate highways, and intermodal rail lines, allowing us to provide the retail and manufacturing industries with flexible B2B and B2C solutions for the movement, handling, and distribution of goods. PT also offers a full suite of retail, wholesale, e-commerce, and omni-channel distribution and transportation services.



SUSTAINABILITY



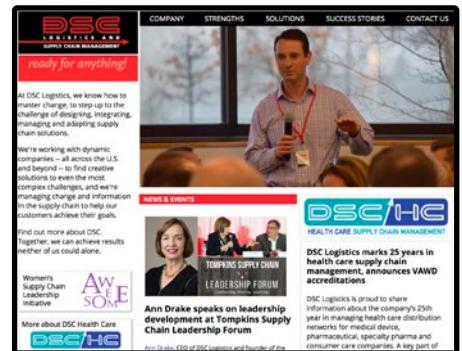
C.H. Robinson Worldwide • www.chrobinson.com

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

DSC Logistics • www.dsclogistics.com

With experience, knowledge, and IT—as well as supply chain capabilities that are adaptable, versatile, and focused on changing customer needs—DSC Logistics helps companies reach their business goals. DSC provides supply chain analysis and design, strategic solutions-based consulting, systems integration, process improvement, and management of logistics operations such as warehousing, transportation, packaging, and fulfillment.

In today's business environment, filled with rapid and unpredictable change, DSC manages change and information in the supply chain by using a strategy called sense-and-respond and by being ready for anything!



KINEXO • www.gokinexo.com

Formerly known as International Traders, Inc. & First American Carriers, Inc., (ITI & FAC), KINEXO strategically propels companies forward by providing highly customized supply chain solutions that are proven to reduce costs, increase transactional visibility, and maximize operating efficiency. Part of the Berkshire Hathaway portfolio of companies, KINEXO's vast experience has led them to become one of the most trusted partners in supply chain management. For more information, visit gokinexo.com.

Lynden • www.lynden.com

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



IN THIS SECTION:

Sustainability - Transportation Mgmt/Freight Mgmt

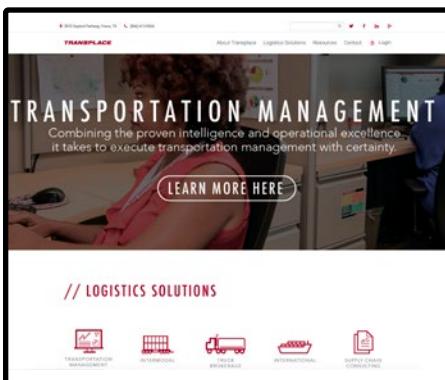
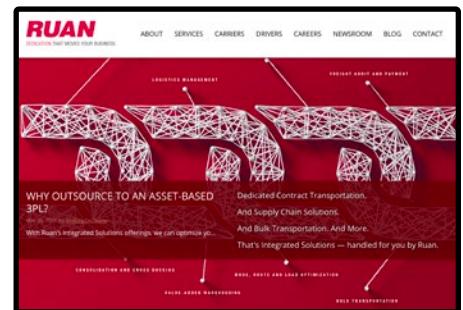


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TRANSPORTATION MGMT/FREIGHT MGMT

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WhitePaperDigest

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



3PL Central

TITLE: *The Five New Rules for Smart Omni-Channel Fulfillment*
DOWNLOAD: <http://hubs.ly/H07BIX00>
SUMMARY: The staggering growth of e-commerce and ongoing shift to business-to-consumer fulfillment are changing the game throughout the third-party logistics industry. If your company is looking to profit from the new opportunities emerging in this environment, download 3PL Central's latest free e-book today.

Kenco

TITLE: *New Supply Chain Technology—Best Practices*
DOWNLOAD: <http://bit.ly/2sYUb9E>
SUMMARY: The purpose of this paper is to provide information about five new innovative technologies that could greatly impact the supply chain: drones, 3-D printing, driverless vehicles, robotics, and wearable technology. The paper delves into the many benefits of each technology as well as some challenges, and gives readers a peek into an amazing future.

Veraction

TITLE: *Game Changer—Transportation Spend Intelligence*
DOWNLOAD: <http://bit.ly/2owsi9p>
SUMMARY: Best-in-class analytics can transform transportation cost data into an advantage for any company. Analytics can eliminate the pain involved with managing raw transportation data and converting it into actionable intelligence—reducing the time required to produce analyses or take action. But with such promise comes hype, making it difficult to distinguish between solutions. In this whitepaper from Veraction, you'll learn what a best-in-class transportation spend analytics solution should deliver.





INTRA

- TITLE:** *Blueprint 2032: How Technology Transforms Ocean Container Shipping*
- DOWNLOAD:** <http://bit.ly/2sZbDLm>
- SUMMARY:** Digitization is rapidly transforming the ocean container shipping industry and the pace of technology innovation is accelerating as businesses seek new and more efficient ways to optimize, according to this new whitepaper. INTRA sees three technology trends converging near term that will move the ocean container shipping industry forward: Network integration across systems, applications and partners; real-time status of containers and cargo; and artificial intelligence that will enable companies to transition from big data to more accessible business analytics that will suggest higher probability outcomes. INTRA also outlines several actions that will prepare shippers for the future, including participation in industry-wide working groups to enable standardization; digitizing business processes; and investing in technology to reduce costs and identify new opportunities.



MacroPoint

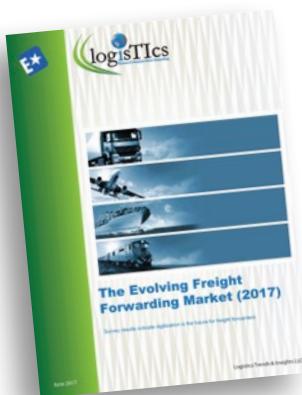
- TITLE:** *Why Freight Visibility is Important*
- DOWNLOAD:** http://bit.ly/Macropoint_Visibility
- SUMMARY:** The global supply chain is always moving, but when it isn't, it is everyone's problem. Goods in various stages must be transported to and from raw materials suppliers, manufacturers, wholesale distributors, retailers, and end users. One hiccup can affect everyone in the logistics sector, thus the term "supply chain." Download this whitepaper to learn the consequences of late loads, undeniable importance of freight visibility, how real-time visibility enables exception management, and what to look for in a visibility partner.

FedEx Supply Chain

- TITLE:** *Improving E-Commerce Fulfillment Through Business Integration*
- DOWNLOAD:** <http://bit.ly/2sYUWiY>
- SUMMARY:** Business integration plays a key role in preparing fulfillment operations for efficiently handling e-commerce orders—far ahead of the click and order confirmation. In this whitepaper, experts from the fields of retail, marketing, and supply chain management discuss how an integrated approach to marketing and logistics can help organizations fully embrace e-commerce and increase profitability.

Logistics Trends and Insights

- TITLE:** *The Evolving Freight Forwarding Market (2017)*
- DOWNLOAD:** <http://bit.ly/2sYQ4us>
- SUMMARY:** Digitization is the future for freight forwarders, according to the results of a Logistics Trends & Insights survey conducted in April 2017 and based on 80 responses. This whitepaper details those results, including how the freight forwarding market is being redefined, critical pain points, what customers value most from their forwarders, market share changes, and more. Technology is leading the way for supply chains and forwarders have taken note: according to the survey, digitization is not a "nice to have" but a "need to have" for all supply chains.



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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

PRODUCT SPOTLIGHT

WAREHOUSE WEARABLES



Photo courtesy of Intel

Intel Recon Jet Pro Smart Glasses: Enabling hands-free order picking, this wearable device provides a graphical user interface displayed in warehouse workers' field of view. The hardware works with the pick-by-vision solution *xPick*, developed by software company Ubimax. By using *xPick* running on these smart glasses, Intel was able to reduce its required pick time per box by 29 percent in its Arizona distribution center. The 2017 pilot showed the smart glasses' positive impact on picking speed, error rate, employee training requirements, and downtime.

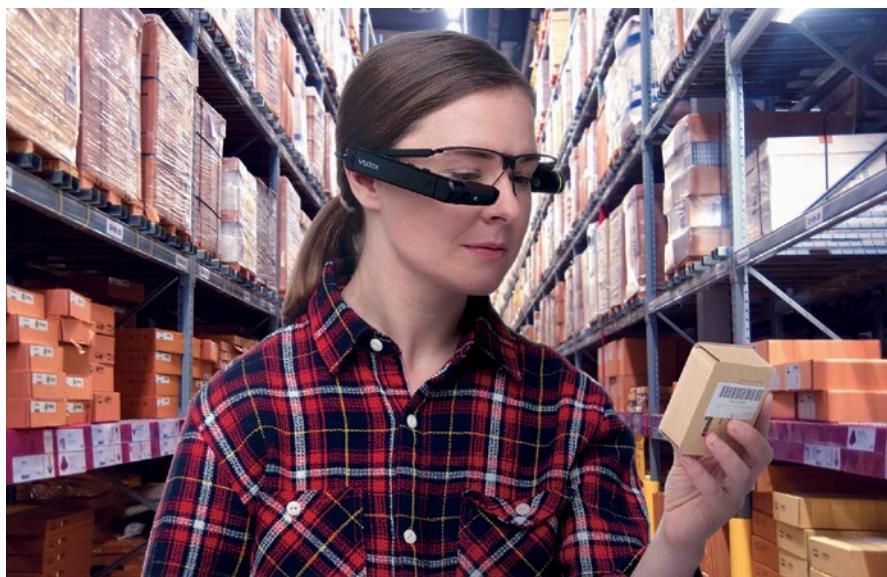


Lydia Smart Watch: This watch provides visual support for Lydia's *Picking by Voice* system, displaying order information and current pick positions. Users can set a vibration notification as a signal for the picker to make changes to an order. The Smart Watch can be operated either by voice or touchscreen. Warehouse employees can also use the watch to communicate with each other.

Microsoft HoloLens: Imagine interacting with holograms. This self-contained holographic computer lets warehouse workers view the warehouse enriched with 3D data, allowing them to identify problems before work starts, follow the most efficient path around the facility, and pick products accurately. The HoloLens device can access Wi-Fi networks that require credentials and lets companies tailor security configurations.



Vuzix M3000 Smart Glasses: This Android-based wearable computer provides most of the capabilities of a smartphone. In addition to working with Android apps, Vuzix's developer resources enable the creation of custom apps to suit supply chain applications. Its head tracking and GPS system monitor workers' locations as well as the direction and angle of their current view for situational awareness. Employees can use its voice, button press, and touchpad with gesture controls to complete tasks.





Google Glass: The Glass display rests just above workers' natural line of sight, allowing them to be aware of their surroundings while accessing Glass. Users can control this head-mounted display by using a touchpad built into its side or by speaking voice commands. Wearable computing company and certified Google Glass partner Ubimax is developing Glass solutions for order picking, manufacturing, quality assurance, healthcare, and other applications.

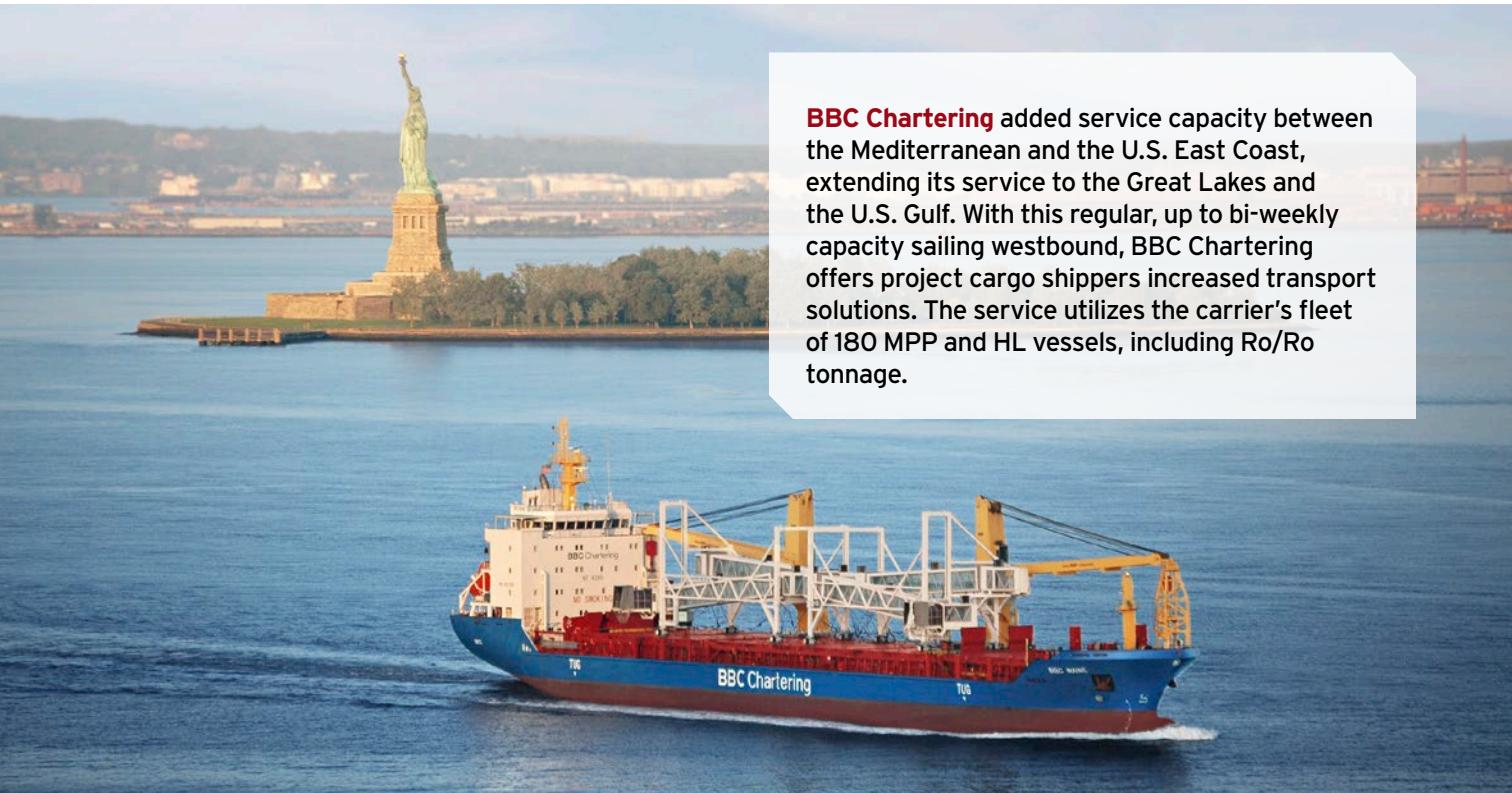
Knapp Vision Manual Picking: This system includes a headset with an integrated camera and augmented reality technology. Warehouse workers capture articles and article data (e.g. 1D and 2D codes) by looking at them. The solution displays the information for each step of work directly in the user's field of vision. Additionally, the navigation system guides the worker along the quickest route to the item to be picked. The solution enables one last look, letting the worker check the completed orders for accuracy.



Koamtac Finger Trigger Glove: This ergonomic glove enables hands-free scanning and features a Bluetooth connection to the worker's tablet or smartphone. Users can quickly scan barcodes by pointing at the items and pressing a button. The glove's shape reduces strain while keeping the wearable accessories sanitary when transferring between users.



Intelligated Voice: Using speech recognition technology, this solution enables hands-free order fulfillment. By automating worker-to-goods tasks, it can increase throughput and accuracy in e-commerce, retail in-store replenishment, 3PL, and omni-channel fulfillment operations. The system supports simple to complex order picking workflows, and adapts to product priorities, from slow- to fast-moving items.



BBC Chartering added service capacity between the Mediterranean and the U.S. East Coast, extending its service to the Great Lakes and the U.S. Gulf. With this regular, up to bi-weekly capacity sailing westbound, BBC Chartering offers project cargo shippers increased transport solutions. The service utilizes the carrier's fleet of 180 MPP and HL vessels, including Ro/Ro tonnage.

// Services //

Fulfillment solutions provider **Quiet Logistics** opened a fulfillment center that supports autonomous picking in Hazelwood, Mississippi, just outside St. Louis. The new center, built on Quiet's proprietary fulfillment management system, enables two- and three-day shipping to e-commerce customers across the United States. It will be powered by a staff of approximately 250 full-time employees working alongside a Locus Robotics autonomous picking solution.

Truckload, intermodal, and logistics provider **Schneider** now offers inbound and outbound intermodal ramp service in Baltimore. The Baltimore ramp connects the Mid-Atlantic region to the rest of the United States and Mexico. The Baltimore ramp allows Schneider to provide shippers with more efficient intermodal services by creating additional Mid-Atlantic southbound/northbound lanes. The new lanes connect Baltimore directly to 10 U.S. ramps and two Mexico ramps.

Yusen Logistics, which specializes in healthcare logistics, launched GDP-compliant global pharmaceutical airfreight services from Germany, opening a dedicated pharmaceutical gateway in Frankfurt. The operation links Yusen Logistics' German import/export consolidation center and European road network to form a multi-modal hub. Its European Pharmaceutical Superhighway is contracted to carry more than 2 million pallets in 2017, providing shared and single-use solutions for complex supply chain requirements.

UPS launched its Express Critical service in Europe for urgent, time-critical shipments that require special handling such as aircraft parts or surgical tools. A UPS team assesses the shipping request, identifies transportation alternatives, and implements a delivery solution that meets time and cost requirements. UPS Express Critical options include air, charter, surface, and a personal courier who can carry the shipment by hand from origin to destination on a commercial flight.

Ergonomic materials handling equipment maker **Southworth Products** introduced the PalletPal Roll-On with Turntable, which features a platform that lowers to floor height so that pallets can be placed and removed using a hand pallet truck. A built-in turntable allows users to rotate loads so that they are always loading or unloading pallets from the near side. The unit's capacity is 2,500 pounds and its 44-inch x 48-inch platform accepts a variety of pallet sizes. The fully raised platform height is 30 inches.



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//Transportation//

Virgin Atlantic Cargo is launching a Melbourne-Hong Kong route via its partner, Virgin Australia. Starting in July 2017, Virgin Australia operates five Airbus A330-200 flights weekly on the route, each offering more than 15 tons of cargo capacity. Virgin Atlantic Cargo is responsible for selling all capacity on these flights, extending its long-haul international sales contract with Virgin Australia.

Trinity Logistics USA and **Etihad Cargo** added a second weekly flight to Rickenbacker International Airport in Columbus, Ohio, from the Indian subcontinent. The route for the new service is Colombo-Columbus-Abu Dhabi, while the first service will continue to operate on the route Colombo-Columbus-East Midlands-Abu Dhabi.

Worldwide shipping group **CMA CGM** started a second Midas service connecting India, the Indian Ocean, the Middle East, and Southern and Western Africa. The Midas 2 route services the Indian Ocean and South Africa from India and the Middle East in a shortened 42-day rotation. Six ships of 2,500 TEUs are deployed on this service.

American Airlines Cargo launched new summer routes, including service between Dallas/Fort Worth (DFW) and Amsterdam Schiphol, which operates on a Boeing 767-300 aircraft, and service between DFW and Rome's Fiumicino Airport, which operates a newly reconfigured Boeing 777-200. The services give shippers of pharmaceutical products more options.



Warehouse management and supply chain technology provider **EVS** released *mobe3* warehouse management system—an iOS-based WMS with artificial intelligence and warehouse simulation designed to optimize warehouse workflow. The system can simulate a warehouse's operations under multiple scenarios and provide comparative efficiency metrics. With *mobe3* simulations, an organization can determine how to lay out a new warehouse, improve an existing warehouse, add new equipment, update picking methods, and optimize staff for a busy season before deploying changes into a live warehouse environment.

//Technology//

Mobile voice and data satellite communications network **Iridium Communications** launched *Iridium Edge*, a global asset tracking, safety, and fleet management device. A plug-and-play solution, *Iridium Edge* enables companies of all sizes to rapidly expand their IoT applications beyond cellular coverage. The device extends the range of coverage to remote locations, providing reliable connectivity.

Software company **Honeywell** introduced its *Connected Freight* solution, which lets shippers monitor high-value and perishable shipments. The new solution, developed in collaboration with Intel and third-party logistics companies, provides real-time information about the location and condition of freight while in transit. It consists of sensor tags, which can be affixed to pallets or individual packages, that sense environmental conditions, such as temperature or vibration.

Digi International, a provider of machine-to-machine and IoT connectivity products, introduced *Digi SafeTemps*, which provides visibility into perishable goods in transit. *Digi SafeTemps* uses wireless monitors that automatically generate temperature alerts and reports of perishable goods throughout the supply chain. *Digi SafeTemps* also provides an independent audit of reefers.

//Products//

Rite-Hite's RHV Vertical Storing Hydraulic Dock Leveler offers a smooth transition for product movement between the warehouse floor and the trailer bed. Its constant-pressure push-button controls keep the operator in control of its movement at all times. A mechanical counterbalance valve allows the leveler to float when positioned in the trailer. The RHV stores vertically, allowing for pit cleaning or full wash-down.

Materials handling equipment and safety products manufacturer **Wildeck** introduced a new LiftLok VRC safety system to prevent lift operation by untrained or unauthorized personnel. A basic key switch or a 10-key pushbutton digital keypad can be added to any Wildeck mechanical or hydraulically operated vertical reciprocating conveyor. Two keys are provided with the basic LiftLok keyed system while authorized lift operators can enter a four-digit user/passcode, or swipe their pre-programmed proximity credentials tag (key fob) on the LiftLok digital keypad to enable lift operation.

Emirates SkyCargo, the freight division of Emirates, expanded solutions available to pharmaceutical shippers by entering into agreements for global container rental services with container providers SkyCell and va-Q-tec. Customers can have temperature-sensitive pharmaceutical and life sciences products shipped using one of SkyCell's temperature-controlled containers, which recharge in Emirates SkyCargo's cool chain network and enable a closed supply chain. Shippers can also choose to have their temperature-sensitive shipments transported in va-Q-tec's advanced passive containers, which are available in five different sizes, taking up to two pallets inside and offering constant temperature control for several days.



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Air & Sea Cargo Americas

seacargoamericas.com

AUDIENCE: Executives from the aviation, maritime, and logistics sectors
FOCUS: Enhancing the growth of the cargo industry; the latest security and safety regulations to secure cargo from biological, chemical, or explosive materials

CONFERENCES

JUL 10-11, 2017 Lake Geneva, Wis.
Midwest Association of Rail Shippers

2017 Summer Meeting

mwrailshippers.com

AUDIENCE: Rail shipping executives
FOCUS: Resolving transportation and car supply problems; railroad operating practices; innovations in transportation and legislative matters

SEPT 17-19, 2017 Long Beach, Calif.

Intermodal Association of North America

Intermodal Expo 2017

intermodalexpo.com

AUDIENCE: Intermodal freight stakeholders
FOCUS: Cloud-based solutions to intermodal challenges; the future of NAFTA and North America's trade lanes; the promise and perils of autonomous vehicles in intermodal; ocean alliances, consolidation, and marine terminal ownership; transloading trends



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BOTS on the GROUND

LOGISTICS OUTSIDE THE BOX
THE LAST MILE

These pavement-pounding robots are making inroads in final-mile delivery.

PIZZA DELIVERY GUY Starship Technologies

Current job:
Delivering pizzas within a 1-mile radius around Domino's Pizza stores in select German and Dutch cities.

Cool feature:
Can deliver goods in 15-30 minutes within a 2-mile radius.



A BOT CALLED CARRY Dispatch

Current job:
Test runs in select locations in the San Francisco Bay Area; pilot programs at two universities in California.

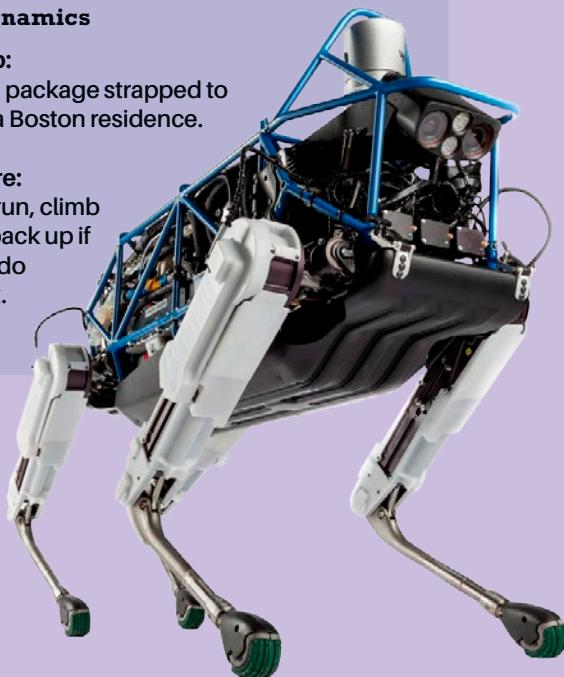
Cool feature:
Offers online on-demand delivery and notifies you when it arrives at your doorstep.



SPOT, THE FOUR-LEGGED COURIER Boston Dynamics

Current job:
Delivered a package strapped to its back to a Boston residence.

Cool feature:
Can jump, run, climb stairs, get back up if it falls, and do housework.



HOT MEAL TICKET Marble

Current job:
Delivering food for partner Yelp Eat24 in San Francisco.

Cool feature:
Uses sensors and high-resolution 3D city maps to navigate urban areas, day or night. Has swappable cargo bays to transport hot meals or medicine.



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