SPECIAL
2019
LOGISTICS PLANNER
EDITION

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THE MAGAZINE FOR DEMAND-DRIVEN LOGISTICS • JANUARY 2019

159 EXPERT TIPS TO AMP YOUR SUPPLY CHAIN

info snacks

BITE SIZED SUPPLY CHAIN/LOGISTICS INFORMATION

Global average, Gen Z and Millennials:

39%

"I am addicted to social media."

25%

"I would rather lose my ability to smell than give up my device."

–Ford's 7th Annual Trends Report, an analysis of worldwide consumer behavior based on interviews with more than 13,000 people across 14 different countries

(see Trends, p. 44)

"Delivery right into the fridge."

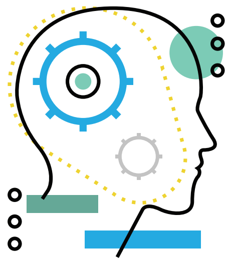
A feasible next step in food delivery, says Marc Lore, president and CEO of Walmart's U.S. e-commerce business

80%

Percentage of retail decision makers who agree that staff checkout areas are becoming less necessary due to new automation technologies

–Zebra Technologies, 11th annual Global Shopper Study

"I become impatient with people who come to me for decisions that I feel they're capable of making themselves. It's important to create an organization of self-motivated people who get things done on their own."



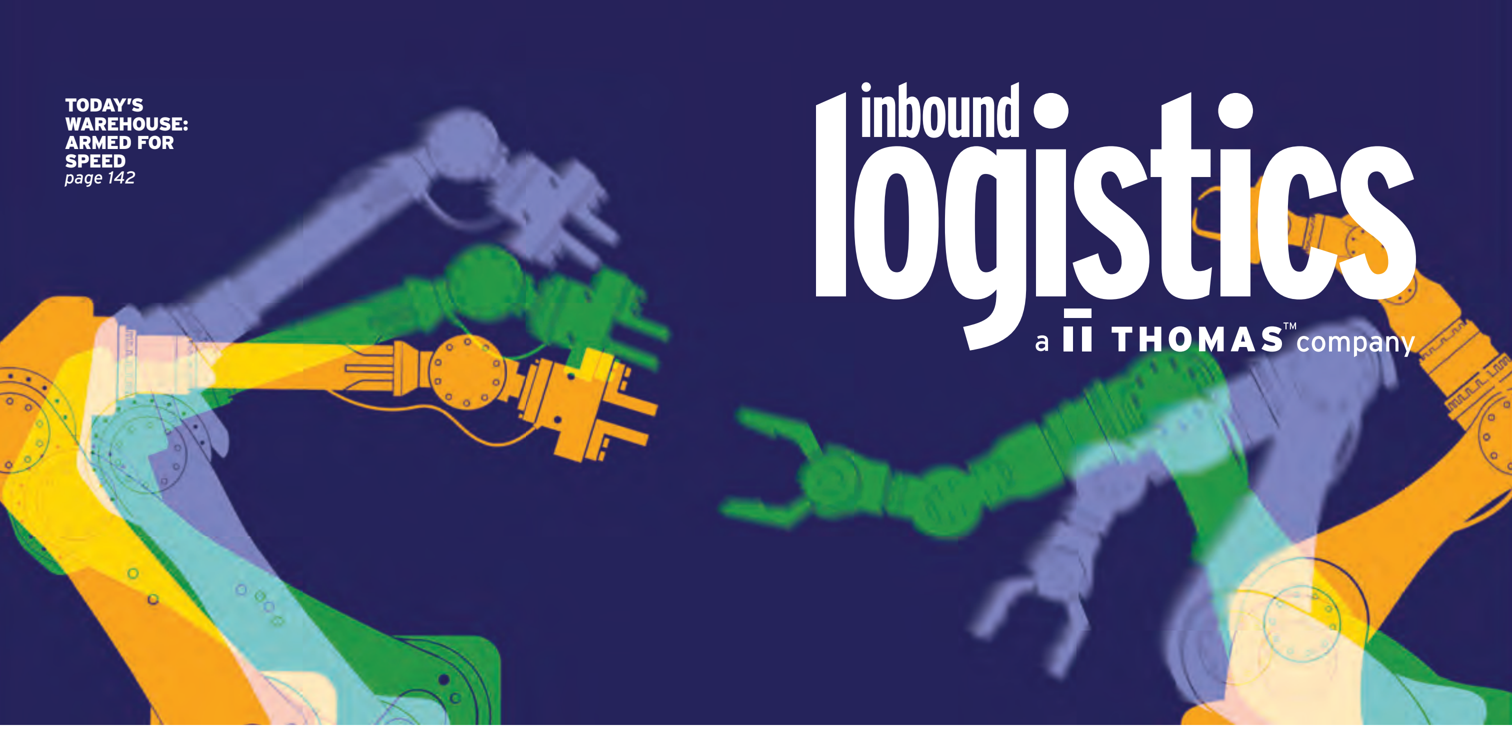
Jeff Cohen, COO, G&D Integrated

(see LeaderShip, p. 26)

That's a lot of CRaP

Inside Amazon, "Can't Realize a Profit" or CRaP products tend to be priced at $15 or less, are sold directly by Amazon, and are heavy or bulky and therefore costly to ship – characteristics that make for thin or nonexistent margins.

– *Wall Street Journal*



January 2019 • Vol. 39 • No. 1

INSIGHT

INPRACTICE

INDEPTH

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INFO

STARTING ON PAGE 309

SPECIAL SUPPLEMENT

2019 LOGISTICS PLANNER

The 2019 Logistics Planner provides detailed information on the segment leaders that stand ready to help meet your transportation and logistics challenges.

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INSIGHT

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WOW

2019 FEATURED SPEAKERS


Karim R. Lakhani


Reshma Saujani


George W. Prest


Scott Sopher


Marcus Lemonis


Craig Ferguson

MON. APRIL 8TH

8:45–9:45 a.m.
Karim R. Lakhani,
Harvard Business School

BLOCKCHAIN TECHNOLOGY FOR SUPPLY CHAINS

TUES. APRIL 9TH

8:45–9:45 a.m.
Reshma Saujani,
Founder and CEO, Girls Who Code

CLOSING THE SUPPLY CHAIN GENDER GAP

WED. APRIL 10TH

8:45–9:45 a.m.
George W. Prest, CEO MHI **& Scott Sopher,** Principal Deloitte Consulting LLP's Supply Chain Practice

PREVIEW OF THE 2019 MHI ANNUAL INDUSTRY REPORT

WED. APRIL 10TH

1:00–2:00 p.m.
Marcus Lemonis, CNBC's "The Profit", CEO, Camping World, Serial Entrepreneur

THE THREE KEYS TO BUSINESS SUCCESS – PEOPLE, PROCESS, PROFIT

WED. APRIL 10TH

4:30–7:00 p.m.
Craig Ferguson,
Comedian & Actor

MHI INDUSTRY NIGHT WITH CRAIG FERGUSON

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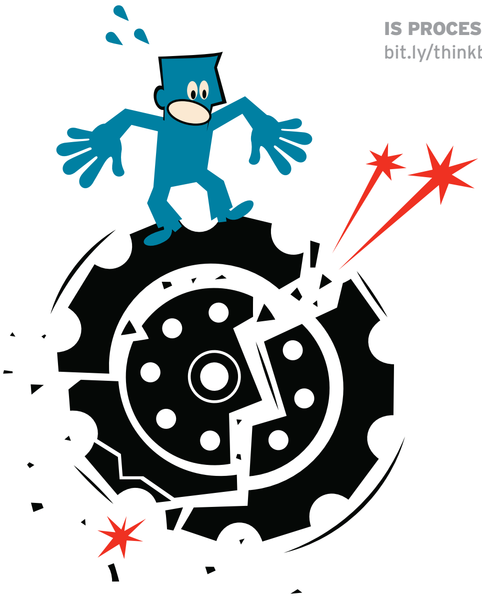

IS PROCESS KILLING THE CUSTOMER EXPERIENCE?
bit.ly/thinkbeyondprocess

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QUICKBYTES

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bit.ly/ILMagPodcastPage

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For up-to-the-minute information, bookmark the *IL* news page. Enjoy opinions, commentary, and links to the latest news to help you stay on top of your game.

bit.ly/IL-news

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Looking for insight into supply chain best practices and trends? Want to review the latest logistics sector research? Our whitepaper database is packed with up-to-date information on all aspects of supply chain operations.

bit.ly/IL_WPDigest

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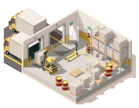
ONLINE COMMENTARY



How to Adapt an Aging Warehouse

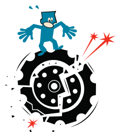
bit.ly/adaptawarehouse

Time to retrofit an existing warehouse? Here are the ins and outs of modernizing an older facility.

How E-Tailers Can Relieve Delivery Anxiety

bit.ly/relievedelivanxiety

Consumers' delivery anxiety is your single largest obstacle to converting orders into sales. Here's how to overcome it.



Is Process Killing the Customer Experience?

bit.ly/thinkbeyondprocess

Many organizations focus on maintaining their methodology, instead of considering customer needs. Don't let employees blame customers for not adapting and following internal processes.

FOR MORE NEWS, TRENDS, AND COMMENTARY SEE INBOUNDLOGISTICS.COM

3PL RESOURCES

3PL Decision Support Tool

bit.ly/IL3PLDST

Choose the services and capabilities you need from a provider and the Decision Support Tool will find matching companies from our Top 100 3PL database – and more than 100 other leading 3PLs. You can even contact companies directly from the search results through our linked RFP functionality.

3PL Request for Proposal

bit.ly/IL3PLRFP

Describe your supply chain challenge, then browse the list of top 3PLs and select specific companies to receive your RFP and provide free, no-obligation advice, solutions, and information specific to your logistics management needs.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CHECKINGIN

Keith Biondo

by Keith Biondo | **Publisher**

When Worlds Collide

In retail there are two worlds or approaches: online and traditional. It appears the online retailers have been winning in the market with all types of consumers, even in manufacturing and industrial products.

But don't count the traditional retail world out yet. Good supply chain management practices, along with blended approaches to serving the customer, such as omnichannel, have helped traditional retailers compete. They can supply the convenience and delivery speed today's consumers increasingly demand. They also use many tools to efficiently match inventory to what's being scanned out the door. Demand driven. Another advantage is that traditional retailers avoid last-mile costs; the in-store consumer picks up the tab.

While traditional retailers try to compete in the e-commerce world, many online retailers seek to build out a brick-and-mortar footprint. When Amazon dove in whole hog and bought Whole Foods, it instantly established a large physical footprint as well as a traditional retail beta test in a very competitive market. It injected the online shopping experience into the offline model.

But trying to combine those two worlds quickly and with blunt force resulted in early casualties. Press reports detailed inventory issues combined with workforce and customer dissatisfaction.

Grocery on the Front Lines

As Amazon's foray shows, the grocery business stands on the front line of the two colliding retail worlds. Amazon's Whole Foods plan to conquer the segment was to mash-up the best e-commerce practices with good traditional retail operations and brand loyalty.

What's enabling the collision of the online and offline shopping worlds? Technology.

Walmart, perhaps Amazon's strongest competitor, is working to connect the two worlds for its customers by signing a new agreement with Microsoft for "a broad set of cloud innovation projects " called Retail as a Service, or RaaS. The massive retailer has a good handle on e-commerce, a clear market advantage, and "amazing presence in offline" stores, says Microsoft CEO Satya Nadella of the partnership.

Redefining the Grocery Customer Experience

Grocery and retail giant Kroger is entering a similar partnership. While Kroger is a different kind of monster than Walmart–with 30 brands across grocery retail, supermarkets, department stores, warehouse stores, fuel stations, even jewelry stores–it has also partnered with Microsoft to "redefine the grocery customer experience."

Kroger is using big data to provide personal customer pricing, discounts, suggestions, and personalized "smart shelf" ads to make in-store experiences more like online experiences, with all the benefits that bricks can offer modern consumers.

Both Walmart and Kroger are using and investing in Internet of Things, artificial intelligence (AI), and robotics technology. Crowdsourcing Amazon competition? Kroger is even building a new business wrapped around the success of its customer experience practices.

Kroger plans to sell its new retail recipe to other retailers around the world. "Some of the most sophisticated AI technology being deployed around the world is actually in offline retail," Nadella says.

"Kroger is building a seamless ecosystem driven by data and technology to provide our customers with personalized food inspiration," says Rodney McMullen, chairman and CEO of Kroger. "We are identifying partners through Restock Kroger who will help us reinvent the customer experience and create new profit streams that will also accelerate our core business growth. We are excited to collaborate with Microsoft to redefine grocery retail."

Clearly, consumer habits are driving change, not just in retail but in all businesses. Whether you use AI, big data or robotics, focusing on the demand point will bring success. That's the lesson learned when worlds collide. ■

CHECKING IN

Felecia Stratton

by Felecia Stratton | **Editor**

When Worlds Combine

In his *Checking In* column (*page 14*), the publisher says he believes dramatic changes in the marketplace lead to supply chain worlds colliding. My view is a little different. I believe supply chain worlds are *combining* and evolving to better serve increasingly demanding customers.

The publisher and I do agree on one thing: There is a cohesive force that's applicable to all worlds. If you cast an unwavering focus on the demand point, you're not on a path to collision but on the right path. Taking a demand-driven approach is beneficial to any business. It is a catalyst for bringing together vendors and customers and buyers and sellers–from the demand point all the way back to the source.

It can be difficult to navigate any kind of evolution or change. That's why, since its inception in 1981, *Inbound Logistics* has provided actionable content–across all its channels–to help you run an efficient and cost-effective demand-driven supply chain. We've also helped you assemble the tools and the partners you need to align your business to better serve your customers.

This blockbuster *Logistics Planner* edition is no exception. The cover story, *159 Ways to Amp Your Supply Chain (page 99)*, is a compendium of actionable knowledge–the best-of-the-best strategies and advice distilled from leading supply chain experts. From evaluating new carrier partners, to sourcing hidden capacity, to disentangling the Gordian knot of new trade regulations, this practical how-to guide can help identify possible cost leaks, plug inefficiencies, and pump up supply chain performance.

Talk about evolution! In *Disrupting the Future of Grocery Retailing (page 166)*, leading industry analyst Brittain Ladd lays out a new plan that he says will revolutionize the way we sell and buy groceries forever.

When information from your warehouse management and transportation management systems combine, the result is greater visibility and communication and more efficient operations *(see Get IT Together, page 254)*.

But you can't embark on the journey to supply chain efficiency alone. You need the best technology, finance, logistics solutions, and transportation service providers. The companies profiled in the *Logistics Planner (page 309)* are listening to your needs and developing new solutions to match them.

So whether you agree with the publisher that supply chain worlds are colliding, or take my view that our worlds are combining, use this special edition of *Inbound Logistics* to keep your demand-driven supply chain on the path to productivity and profitability. ■

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BPA WORLDWIDE

Good Question…

READERS WEIGH IN

What's your best supply chain tip?

❶ **Think ahead.** Analyzing the supply chain is a learning process not just for improving product deliveries today, but also for improving customer service in the future. Streamlining supply chains helps businesses look beyond tactical order fulfillment and gain a better understanding of future customer needs.

❷ **Streamline the global supply chain to provide increased efficiencies throughout the entire product lifecycle.** By improving the accuracy of demand forecasts and schedules, optimizing production lines, and reducing costs, companies are more flexible and profitable. Gaining a better understanding of supply chain processes and data is an essential first step required for successful optimization.

Imtiaz Ali
Logistics Customer Service Executive
DHL

Think digital as well as physical. When one first thinks of their supply chain they immediately go to the physical side: shipping, storage, and distribution. The Internet of Things, artificial intelligence, blockchain, and the application of advanced analytics must be included in your plans as well. Today's commerce is driven by the digital side and supported by the physical side.

Mike Kasperski
Senior Managing Partner
enVista

❶ **Be flexible and honest** with customers, vendors, team members.

❷ **Commit to maintaining the highest level of customer satisfaction** as a carrier/service provider. Dependability should be a cornerstone of your service model.

❸ **Make it as seamless as possible to transact business** as a shipper.

❹ **Treat drivers as part of your supply chain** on the docks.

David R. Hughes
President
Dalor Transit

Listen to the people working in the system. Lower-level personnel often aren't taken seriously when they have valuable ideas.

Nick Balazs
Operations Specialist
The Odom Corporation

Get to the "why." While there are tools and methodologies (what, how, when) to be more effective and efficient, you should know your customer, know your people, know your process, know your product, and you will have the "why."

Monica Pons
Principal Industrial Engineer
Medtronic

Never say, "That's not my job."

James Stone
Freight & Warehouse Solutions
Echo Global Logistics

Measure the right "stuff" to drive increased service, cost reductions, and overall productivity to your business. While supporting customers as a consultant, I was always amazed at clients who asked me to come in and drive efficiencies in their supply chain, yet couldn't tell me their case order fill rate. Instead of having a scorecard with 20-plus key performance indicators (KPIs), you only need two or three KPIs to drive results linked to your business objectives.

Ryan Boccelli
Vice President of Operations
Ascent Power
Ascent Global Logistics

Schedule realistically. By implementing best practices and technologies that enable transparent collaboration with carriers, shippers can minimize idle time and cut loading/unloading times significantly, which indicates that you share responsibility for drivers' Hours of Service requirements. A comprehensive dock scheduling solution or drop-trailer program can help shippers better honor time commitments to their carriers.

Ed Moran
Managing Director & SVP
Sales and Marketing
Transporeon Group Americas

Keep your employees engaged. Make communication a priority with not only your partner—the customer—but also with your employees—your other customer. Hire a strong operational HR team that understands manufacturing and logistics and partner with them in all aspects of the business. If your HR team isn't involved and doesn't know and understand all components of the business then they can't place the right candidates in the business to be successful.

Angela Rymer, MBA
Human Resources Manager
Volkswagen of Chattanooga Division
TVS Supply Chain Solutions
North America

Consider transparency and integrity as one and the same. In supply chain/logistics, you can never have enough.

Alex Carroll
Team Lead
Carrier Safety and Compliance
Arrive Logistics

Avoid sole sources if possible. If not, the engineering department is your key for a successful and complete supply chain.

Mohamed B.
Project Manager and Chief Engineer
Siemens

Be Flexible and Holistic

Make supply chain management adaptable to any changing business trends.

Muhammad Bilal, CSCA
Assistant Manager Supply Chain
Key Accounts
Agility

Think of the whole supply chain as a team, play as a team, and win as a team.

Abdullah Bin Salahuddin Awan
Configuration Engineer
Huawei Technologies

Be okay with change; always grow your knowledge base; don't get stuck in old ways. This applies to more than just supply chain.

Kyle Morris
Logistics Solutions Manager
Ward Transport and Logistics

Establish where your decoupling points need to be. Be Lean upstream and agile downstream from the points.

Thomas Hofmeyer
Logistics Manager
Tecan

Ensure your supply chain integrates the people within it. The holistic, integrative approach that a supply chain requires needs to be not just systems, data, and process focused, but it absolutely must be holistic and integrative of the people within it. Do the workers executing tasks understand their role within the organization? The impact the organization has on the greater supply chain network and how local goals nest within the overall mission? Are leaders actively developing their people to enhance their skills and communicating rigorous feedback on performance or changes to the organizational priorities? Too often we think of the technologies and systems without the human element context. Good effective supply chain management (really, ANY management) must also involve the leadership of people in the execution of those operational goals.

Aaron Freed, DML
Logistics Officer
U.S. Army

HAVE A GREAT ANSWER TO A GOOD QUESTION?

Be sure to participate next month. We want to know:

Should the USPS be privatized? Why or why not?

We'll publish some answers.

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DIALOG

THE ONGOING CONVERSATION
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What to Expect in 2019

Re. Good Question: What Are Your Top Supply Chain Predictions for 2019?
bit.ly/2019SCforecast

1. **Global rebalancing of supply chain networks.** Most global companies will have to reevaluate their entire plan-make-source-deliver supply chain to re-optimize for costs and service in order to account for the implications of global trade agreements.
2. **Disaster management competency upgrades.** While only a few multibillion-dollar global corporations had formal disaster recovery programs in the past, 2019 will see most large and mid-cap companies develop a more robust disaster management capability to cope with supply chain disruptions.
3. **Possible relief in freight capacity.** Most U.S.-based shippers had a tough year in 2018 in securing freight capacity and maintaining customer service levels at budgeted costs. 2019 will bring some relief in freight capacity and stable or slightly lower contracted freight rates driven by the trade war and global economic slowdown.
4. **Inventory costs go up.** The U.S. Federal Reserve increased interest rates several times in 2018 and the trend will likely continue in 2019, making both short and long-term debt more expensive. Working capital-intensive industries will feel the pinch, with inventory cost of capital going up, and will look to optimize their inventory days of supply without severely impacting their customer fill rates.
5. **Digital supply chain becomes more tangible.** 2019 will see an increased degree of application of digital concepts in supply chains including demand planning/sensing with short cycle times to reduce inventory costs and improve service, agile omnichannel distribution capabilities enabled by real-time asset tracking, and automated distribution centers and factories driven by robotics.

Arun Kochar, Partner
Operations & Performance Transformation Practice
A.T. Kearney, via email

Chained to Blockchain Misconceptions?

Re. 10 Tips: Implementing Blockchain Technology
bit.ly/blockchainhow-tos

Some think blockchain requires complicated, expensive implementations. But, blockchain can be deployed through a simple, cost-effective Software-as-a-Service model, allowing every link in the supply chain to share transactional data through any internet-enabled device. Companies can then deliver a singular, omnichannel retail experience, using key metrics, like online and offline stock, for proactive demand planning and greater profitability.

Pratik Soni
Co-founder and CEO
Omnichain Solutions, via email

Artificial Intelligence Is Even Smarter

Re. AI Ushers Supply Chains Into Data-Driven Future
bit.ly/SCfutureisAI

AI solutions are smarter and more eloquent than most of us realize. Pick-and-place robots, for example, are projected to put away 25 percent of manufactured goods by the end of 2020. When thinking of AI, we need to remember that you can't "implement AI" any more than you can "implement the internet." First, you must figure out your "why." 2019 will be all about AI realism, with new targeted, project-based AI solutions.

Antony Bourne
Global Industry Director for Manufacturing
IFS, via email


dfYOUNG
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1635

Choosing a Third-Party Logistics Provider

Don't have a third-party logistics (3PL) provider? Unhappy with your current 3PL contract and/or provider and considering a switch? These steps will help you navigate the 3PL selection process to get the most value from a partner.

1 SIGN A CONTRACT.

The contracting phase is a tell-tale sign for how the organizations will mesh culturally. Good future partners figure out how to work together through the terms and conditions process, just like they will through operational or systems difficulties.

2 UNDERSTAND THAT SIZE, SERVICES BREADTH, AND EXPERIENCE MATTER.

While prospective logistics providers will describe their differentiators, do your homework and thoroughly vet them to learn their true capabilities and competencies. That's the way to identify a true match.

3 MAKE A BUSINESS CASE TO OUTSOURCE OR SWITCH TO A 3PL.

Assuming it is not a foregone conclusion, it is important to take the time to determine the value—potential return on investment, switching costs, process, and systems implications—around the outsourcing decision. This can take time, not just from an analysis perspective, but also from a cultural or organizational perspective.

4 IDENTIFY THE RIGHT PLAYERS.

There are a lot of logistics service providers in the market, so determining the right type of partner—whether industry-specific, commodity-specific, technology/automation-driven, geographic, and/or scalability-driven—is crucial.

5 NEGOTIATE.

Pricing and negotiations should come after you identify the right partner. These should be long-term engagements, with savings goals, targets, and contingencies based on near-term returns and more partner-friendly pricing based on longer-term needs for service and growth—for all parties.

6 INCLUDE SERVICE-LEVEL AGREEMENTS.

Tie service-level agreements to financial incentives for all parties. Everyone has cost, profit, and inflation considerations, so think broadly about how this will play into pricing, which all too often is one-sided.

7 UNDERSTAND THE 3PL'S UNIQUENESS (THE ART).

Due to market structure and complexities around business requirements, it is important to evaluate the providers outside of the RFP and defined process. Your 3PLs are important to your vendor/supplier/customer/carrier partners, and they all need to be an extension of your team. Evaluate 3PLs like they are future colleagues.

8 COMPARE APPLES-TO-APPLES (THE SCIENCE).

A well-structured RFP and timeline help create a fair and equitable environment for those interested and a fit to propose their capabilities against the defined design and requirements. Providers might try to disrupt this process for a variety of reasons, but that is OK and expected for good reasons: They want the business and they want to help you.

9 DECIDE ON SUPPORT TEAM MEMBERS.

Have the core project teams and operators on both sides meet to understand who will be working together. It will be obvious if the right team members are involved for a successful relationship. It comes down to the people.

10 DOCUMENT DESIGN AND REQUIREMENTS THOROUGHLY.

Once you decide to outsource or switch providers, draw up a detailed solution design and requirements document to communicate who, what, why, and how.

Source: Geoff Milsom, Senior Director, enVista

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NEWS & TRENDS IMPACTING THE

TRAVEL & HOSPITALITY SUPPLY CHAIN

SECRETS TO GOOD HOSPITALITY

These steps can springboard your organization to new heights of cost efficiency.

1. *Stay up to date on pricing changes and market dynamics.* Tracking price fluctuations, understanding supply and demand, as well as seasonality, is essential for every product in your pipeline.

2. *Consider alternate brands and suppliers in your food and beverage operations.* While a strong relationship with suppliers is critical, never be shy about rotating in new items to quickly and dramatically reduce your costs.

3. *Aspire to as few deliveries as possible.* One delivery of $4,000 means lower transportation and labor costs than eight deliveries of $500. Always consolidate deliveries.

4. *Plan the timing of your orders carefully.* Allow plenty of lead time for your order to ensure availability and reduce the stress of not having a product available. Suppliers may offer discounts during specific times of the year, due to seasonality or lower demand. Capitalize on that, even if it's far in advance. If you expect prices to jump on essential products, order them now.

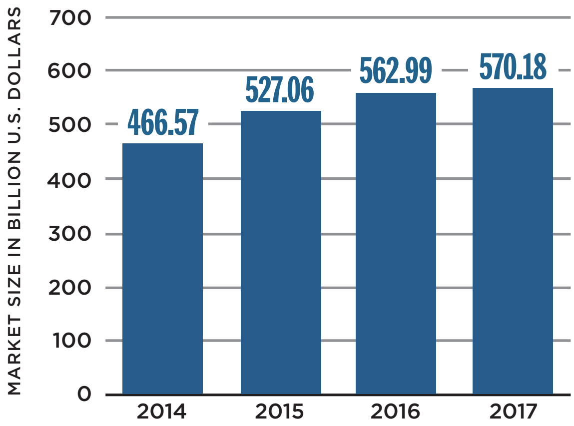
5. *Consider total cost of ownership (TCO).* When choosing between items, consider the long-term costs as well as the original price. The purchase with the lower TCO will make for a better value over time. Consider preparation time, brand, durability, warranty, customer expectations, and waste.

6. *Calculate rent vs. own and outsource vs. in-house.* Undertake a detailed analysis of procurement, maintenance, repair, and replacement costs. Renting can save upfront capital outlay and reduce operational costs, but owning offers lower long-term cost and constant availability. Outsourcing offers more flexible scheduling, while in-house labor gives you more control over your labor force.

7. *Implement receiving guidelines.* Check all receivables to ensure you're getting exactly what you asked for. Check the weight, temperature, count, shelf life, and condition of goods. If you see any visible signs of damage to a box or crate, open it and inspect. If there's any damage or spoilage, you must refuse the delivery.

SOURCE: Chip McIntyre, SVP, Strategic Sourcing, Avendra

CHECKING IN WITH THE HOTEL INDUSTRY



Global hotel industry market size (2014-2017), in U.S. millions

The global hotel industry falls under the umbrella of the travel and tourism industry, which contributed $8.27 trillion to the global economy in 2017. Travelers who are on the road for more than a day need a place to sleep and rest, and various types of lodging across the world can accommodate them.

The global occupancy rate (the share of total rooms available that are occupied or rented at a given time) of hotels in most regions increased over the previous five years. Europe had the highest occupancy rate in 2016 at 70.4 percent, closely followed by the Asia Pacific region at 69 percent. In the same year, the Middle East and Africa were the most expensive regions for hotels with an average daily rate of $149.02. The cheapest region for the past two years was Asia Pacific.


REACH FARTHER.
23 inland terminals to bring you closer to your customers.

LEADERSHIP

Conversations With The Captains of Industry

By Merrill Douglas

Jeff Cohen
Chief Operating Officer
G&D Integrated

A No-Fail Mentality and Sheer Force of Will

MANY YEARS AGO, A FEW DAYS INTO a new job as an analyst at Sears, Roebuck and Co., Jeff Cohen was working at his desk when the chief financial officer, Ed Liddy, walked by. "He stopped, introduced himself, and sat down to chat for a few minutes," Cohen says. "I don't remember what we talked about. But the fact that he did that for such a low-level person has stuck with me to this day."

Since then, Cohen himself has risen to the C-suite; he's chief operating officer at G&D Integrated, an asset-based third-party logistics (3PL) provider based in Morton, Illinois. He has been in that position since July 2018, when G&D promoted him from executive vice president of the Transportation Division. As a leader, Cohen often thinks back to his chat with Liddy. "I take it as a reminder that courtesy and respect for the individual go a long way," he says.

We recently talked with Cohen about his leadership strategies and his current activities at G&D.

IL: What led you into logistics?

I started working in logistics in 1991, as a consultant with KPMG. I stayed in that role for 17 years. Then I moved to the industry side, becoming chief executive officer at SLD Transport in Atlanta. I didn't know a lot about logistics when I started at KPMG, but as I got into it, I was endlessly fascinated by the number of puzzles you work through in that area. Each day, you encounter some of the same challenges in different forms, but once you make your deliveries, you have to start all over. You've only proven yourself until you get to the next day.

IL: What's at the top of your agenda as COO of G&D?

We're trying to get our hands around what kind of company we want to be. For me, that means rationalizing our strategy as a 3PL. Like a lot of companies, we grew up somewhat opportunistically, based on work and prospects that presented themselves. As a result, we provide a broad range of services, everything from transportation to a variety of value-added logistics services, even metal fabrication.

I'm currently occupied with how to meld all those services into a strategy that ties our solutions together for our customers, so we don't just offer them in pieces, and so we can grow the business more effectively.

On the transportation side, just like everyone else, I'm concerned with how we can find more truck drivers.

IL: Tell us about one particularly tough logistics challenge you've faced in your career.

In late 2017, we had the opportunity to start providing truckload services to a major e-commerce furniture and home furnishings company. They were growing rapidly, and their business model relied on delivery speed and reliability. The major national carriers they used at the time were struggling to meet their delivery windows.

We had a chance to show what we could do. We quickly focused our organization around the challenge, and within a few weeks we were getting nearly 100 percent of the company's volume out of their Chicago-area facility.

This example reflects who we are as an organization. We have solid processes and information systems. But our ability to perform has been a matter of total commitment, with everyone involved, down to our drivers. It's a product of a no-fail mentality and sheer force of will.

IL: **How do you rally people to accomplish something like that?**

When you get the right people in place, they rally themselves. My role is to provide some direction, let them know what I view as priorities, but then give them a lot of room to figure out how to pursue the solution. Sometimes I need to work through a thought process with them. I try to nurture discussions where we approach issues analytically and ask tough questions from multiple angles.

Sometimes it's my place to make the tough calls when we're dealing with gray-area questions. But I become impatient with people who just come to me for decisions that I feel they're capable of making themselves. It's important to create an organization of self-motivated people who get things done on their own.

IL: **What's another facet of your leadership style?**

We try to keep things fun and entertaining. It makes people comfortable, and builds team rapport.

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

I find my time split into tiny increments, where I jump from subject to subject. It's hard to do any in-depth thinking in that environment, especially in a realm like logistics, where so many things are happening at once.

I've tried to develop ways to sequester myself at times, so I can focus on something for an extended period. This goes against what the management books say about the need for an open-door policy, which we certainly do have. But at times, to be effective, I have to get myself to another office, where I can't be so easily found.

IL: **Is there something you used to believe about business but, based on experience, no longer believe?**

I was an economics major in college, and I always thought the principles of supply and demand were important. I still do, but I've found that especially in a market like transportation, pure economic principles don't always play out the way you'd expect. Factors such as emotion and momentum play an important role in the movement of markets.

Part of the reason is that many small carriers in the market impact pricing, and they react quickly and nervously to changes. For example, if someone has excess capacity, and they have a highly expensive asset that's sitting around, they react somewhat emotionally, and rates drop quickly.

IL: **How do you like to spend your time outside of work?**

Thanks to my daughter, I'm a rabid Clemson University football fan. I play golf and tennis, and I like to travel internationally. Also, everyone on the G&D executive team is involved in a community organization. I sit on the board of our local CASA branch, which provides court-appointed advocates for abused and neglected children.

Deep Dive Into Data

Among the technologies Jeff Cohen finds incredibly useful at G&D is data analytics. The company has developed teams that specialize in accessing and querying warehoused data, and those efforts provide many valuable new insights into the business. "We've seen efficiency improvements," Cohen says. "Analytics have changed how we look at equipment investments and helped us create special programs for customers."

In one project, G&D devised an incentive program to encourage driver behavior that promotes fuel economy. This wasn't easy. G&D's drivers make all kinds of runs, long and short. They pull a wide range of equipment, and their trucks vary in age. With such diversity, it's a challenge to develop a fuel efficiency scorecard that works for everyone.

"By diving into the data, we identified groups with common characteristics we could put together, created a scorecard that was fair, and put that incentive program in place," Cohen says.

The program has made a real difference. "It's partly the incentive, but also partly the competitive spirit," he adds. "Nobody wants to be at the bottom."

READER

PROFILE

as told to Karen Kroll

Mark Bakker, head of supply chain operations, Americas, HP Inc.

RESPONSIBILITIES

Manage supply chain operations for owned and channel inventory for commercial and retail markets for the Americas; meet financial goals for the printing, graphics, and personal systems product categories.

EXPERIENCE

Vice president, supply chain operations, Asia Pacific and Japan; director of operations, EMEA; director, service business operations, EMEA; call center manager, support engineer, and project manager, all with HP.

EDUCATION

Business administration degree, Fons Vitae Lyceum, Amsterdam

Mark Bakker: Change Agent

WE'RE SIGNIFICANTLY TRANSFORMING THE SUPPLY chain environment at HP. Roughly three years ago, Hewlett Packard divided itself into two pieces: Hewlett-Packard Enterprise and HP Inc. After that, we at HP Inc. took a critical look at our IT architecture and infrastructure.

We needed to retool the business for success in a landscape that's moving from transactional to contractual customer relationships. We also needed better tools and processes to support new product introductions and business models.

We set out a roadmap. We cut 13 Enterprise Resource Planning (ERP) systems across the company to two. We recently implemented the first release of a new ERP in North America, and hope to complete implementations in all business units in two to three years.

We're also implementing a new set of planning tools that improve forecast accuracy. Ultimately this will lead to us being more capable of supporting customers. We want to improve predictability in on-time delivery and provide better visibility to customers' orders.

I started with the company in the Netherlands in 1994. I worked up the ranks in the services organization, and then decided to change careers. I wanted to be more involved in business

The Big Questions

What supply chain-disrupting technologies would you speed development of?
3D printing, smart packaging, and the Internet of Things. These impact the three cornerstones of supply chain practice—inventory, cost, and customer service—and allow for product personalization, a trend that will accelerate.

What song title best describes your job?
Under Pressure by Queen. We face constant pressure as we support top- and bottom-line business results, while serving our customers' needs.

Words to live by?
Be happy, but never be satisfied. There is always more, better, cheaper, nicer.

What would you tell your 18-year-old self?
Your dreams will become a reality, as long as you put in the effort and work hard.

How has the work world surprised you?
In any job, there is always more to learn and achieve, as long as you remain engaged and hungry.

execution and help grow the company. In 2005, I switched to supply chain.

I moved to Germany and spent five years in supply chain and production planning, and leading the logistics organization for Europe, the Middle East, and Africa. I led the nearshoring of back-office activities and some production facilities from western Europe to the Czech Republic, and led several logistics consolidation initiatives.

Then I saw an opportunity to head the supply chain for our printing division in Asia-Pacific. I moved to Singapore for two years.

At this point, HP consolidated the print and PC businesses and supply chains. That offered an opportunity to take a broader role as head of supply chain for the print and PC businesses in the Americas.

In my current role, I've overseen the offshoring and nearshoring of different functions, network consolidation, and a transformation of the order management process.

In all my roles, I've had to balance optimizing cost structure, inventory, and cash flow while providing high customer service levels through our supply chain and services. This means constant change through transformation.

We try to help people understand the case for change. They can deal with change more effectively if given options, and time to react and execute on those options. Success requires balancing the company's interests with the interests of the people affected by the change. ■

NOTED

THE SUPPLY CHAIN IN BRIEF

SHOVEL READY

Georgia Ports Authority announced a new inland terminal location along Interstate 85 in Hall County. The terminal *(rendering above)* will serve Northeast Georgia and the Gainesville, Florida, region.

Smithfield Foods held a grand opening for its new 500,000-square-foot distribution center in Tar Heel, North Carolina. The new center will help the company optimize its transportation and distribution network and is expected to add approximately 250 new jobs to the state.

Walmart plans to open a new high-tech distribution center in California using Witron technology to store and retrieve grocery items and build pallets with an automated system. The facility is expected to begin operating in fall 2020, and the retailer estimates it will be able to move 40 percent more product than a regular distribution center.

UP THE CHAIN

David Ball was named senior vice president of global supply chain and procurement at **Avanos Medical**, a global medical device company. Ball will spearhead the company's integrated supply chain strategy.

SEALED DEALS

Randa, the world's largest men's accessories company, tapped RFID and barcode solutions provider **MSM Solutions** to implement an RFID tracking system in its Reno, Nevada, fulfillment center. Paired with MSM's *PortalTrack* software, the solution allows for real-time inventory management.

m&a

SEKO Logistics started off 2019 with its first full acquisition: fellow independent freight forwarding specialist **GoodShip International**. The 3PL's plan is to expand its global footprint through strategic partnerships and acquisitions in forwarding and technology.

AIT Worldwide Logistics acquired freight forwarder **ConneXion World Cargo** to establish a greater presence in the United Kingdom. ConneXion is headquartered in London and has additional offices in Halifax, Canada; Hong Kong; China; and Paris, France, as well as UK-based operational centers in London, Exeter, and Manchester.

Magnate Worldwide acquired **Domek Logistics LLC**, an asset-light freight forwarding and customs house brokerage services provider. Domek will become part of Magnate Worldwide's international freight forwarding subsidiary Masterpiece International.

Canadian international freight forwarding services provider **Manitoulin Global Forwarding** made its first U.S. acquisition with Texas-based **N/J International**. The move positions Manitoulin more strongly in the oil and gas and project sectors in both countries.

GREEN SEEDS

CMA CGM global shipping group received the Most Accomplished Asia Pacific Ship Owner Award 2018 at the Maritime2020 Summit, which recognizes ship owners demonstrating the greatest efforts toward making fleets more sustainable and environmentally friendly. CMA CGM reduced its CO2 emissions per container by 50 percent between 2005 and 2015 and has committed to an additional 30-percent reduction by 2025.

Multimodal operator **Samskip** was named lead partner in Norway's SeaShuttle project, with the goal of developing emissions-free autonomous containerships that also operate at a profit. SeaShuttle is part of a larger six-part Norwegian program known as PILOT-E working to bring solutions for climate-neutral industries to market.

▼ Supply chain solutions provider **J.B. Hunt Transport Services** added five FUSO eCanter all-electric trucks to its private fleet. The trucks have zero tailpipe emissions and are environmentally friendly and more economical and efficient than a traditional diesel model, making them ideal for final-mile delivery.

SEALED DEALS

Transervice Logistics was selected by dairy cooperative **Prairie Farms Dairy** to provide onsite dedicated contract maintenance at its milk bottling plant in Somerset, Kentucky. The plant is currently undergoing an expansion in the bottling and receiving areas, and Transervice will be responsible for maintaining roughly 60 power units there.

recognition

Victor Finnegan of American Expediting Co. was named one of 2018's **Most Admired CEOs** by the *Philadelphia Business Journal*. The magazine selects recipients of the annual award based on accomplishments, leadership traits, and community service.

Niagara Bottling, one of the largest suppliers of private label bottled water with more than 30 facilities, named **Convoy** its **Broker of the Year** for 2018. The award recognizes Convoy's operational excellence, performance, and innovative solutions for Niagara's shipping needs.

David P. Abney, chairman and CEO of UPS, was honored with membership in the **Horatio Alger Association of Distinguished Individuals' New Member Class of 2019**. The award recognizes individuals who overcome adversity to achieve professional and personal success; Abney started his UPS career washing trucks on the night shift at age 18.

Roy Schleicher, recently retired executive vice president and chief commercial officer of the Port of Jacksonville (JAXPORT), Florida, received a **Lifetime Achievement Award** from the Containerization & Intermodal Institute (CII). CII also presented the **2018 Connie Award** for contributions to containerization in world trade and international transportation to **Michael Wilson**, senior vice president of business operations for Hamburg Süd North America.

Old Dominion Freight Line received the **top national LTL carrier** distinction in the MASTIO Quality Award survey, named Overall Winner for its ninth consecutive year. The annual survey incorporates feedback from customers across key measures.

The New York/New Jersey Foreign Freight Forwarders and Brokers Association selected **Harold J. Daggett**, International President of the International Longshoremen's Association (ILA), AFL-CIO, as its **2019 Person of the Year**. Daggett serves as the ILA's chief negotiator, representing 45,000 members.

GOOD WORKS

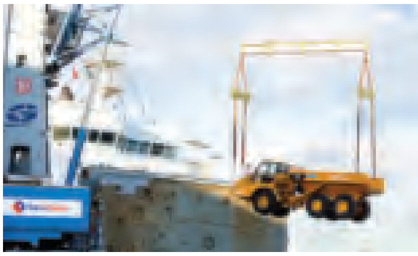
Drivers from **Arpin Van Lines** delivered 93,000 remembrance wreaths to veterans' cemeteries across the United States for National Wreaths Across America Day on Dec. 15, 2018. This was Arpin's sixth year participating in the day of veterans' remembrance, which coincides with the wreath-laying ceremonies at Arlington National Cemetery.

E-commerce company **Molekule** donated more than $90,000 worth of air purifiers, filters, and masks to first responders, evacuation sites, and schools during the California wildfires. Its logistics technology partner **ShipBob** utilized its fulfillment centers in urban San Francisco to provide same- and next-day shipping during a time-critical process.

Transportation company **CFI**, a subsidiary of TFI International Inc., organized its 25th annual Truckload of Treasures holiday giving campaign. The 2018 campaign raised more than $46,000 for 17 charitable organizations across North America.

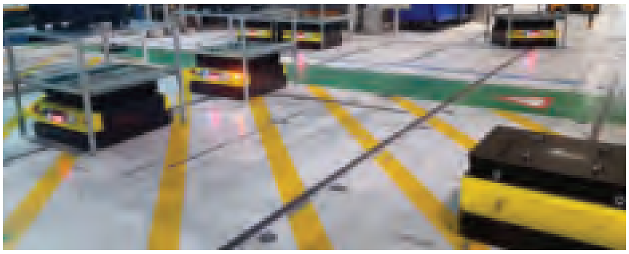
Panalpina assisted UNICEF for the sixth consecutive year of flying relief aid to Uganda with donated charter flights. Panalpina transports the relief goods, including high-protein food for malnourished children, pregnancy delivery kits, spare parts for water pumps, and mosquito nets across the border to South Sudan and other regions of the country.

SEALED DEALS



British Antarctica Survey's **Rothera Research Station** tapped **Trans Global Projects** (TGP) for a project logistics management contract to ship equipment and construction materials. TGP is removing and replacing the old wharf at Rothera Point without threatening the delicate Antarctic ecosystem, 900 miles south of South America's southern tip, to accommodate a new polar research vessel, the *RRS Sir David Attenborough*.

The Iowa **Alcoholic Beverages Division** (ABD) signed an agreement with **Ruan Transportation Management Systems** for dedicated contract transportation and value-added warehousing. Ruan will be ABD's transportation and warehousing partner in April 2019, hiring 16 drivers and 30 warehouse personnel with plans to retain many of ABD's current employees.



Auto guided vehicle company **Kivnon** installed a warehouse management platform for **Faurecia**, an automotive technology company, in Vitoria-Gasteiz, Spain. The system includes an end-of-line buffer, sequence, and warehouse as part of its car seat provision system.

Skechers, a lifestyle and footwear company, worked with system integrator **Inther Group** to expand intralogistics systems within its European distribution center in Liège, Belgium. The retailer increased capacity within the distribution center to keep up with growing European demand.


INBOUND LOGISTICS TOP 100
3PL PROVIDER 2018
ELM GLOBAL LOGISTICS
PUT ELM AT THE HELM
Established in 1980, ELM Global Logistics is your Northeast third-party logistics partner, with distribution facilities totaling more than 1 million square feet.
We offer dedicated or shared operations, along with a range of services including:
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Drivers Need Some TLC

With the American Trucking Associations projecting a shortfall of 174,00 truck drivers by 2026, it is important for organizations to understand and address driver concerns in order to retain a strong workforce and attract new talent. Third-party logistics provider Kenco and CarrierLists conducted a recent driver survey that reveals their frustrations, concerns, and priorities, thus identifying a benchmark for the state of the profession.

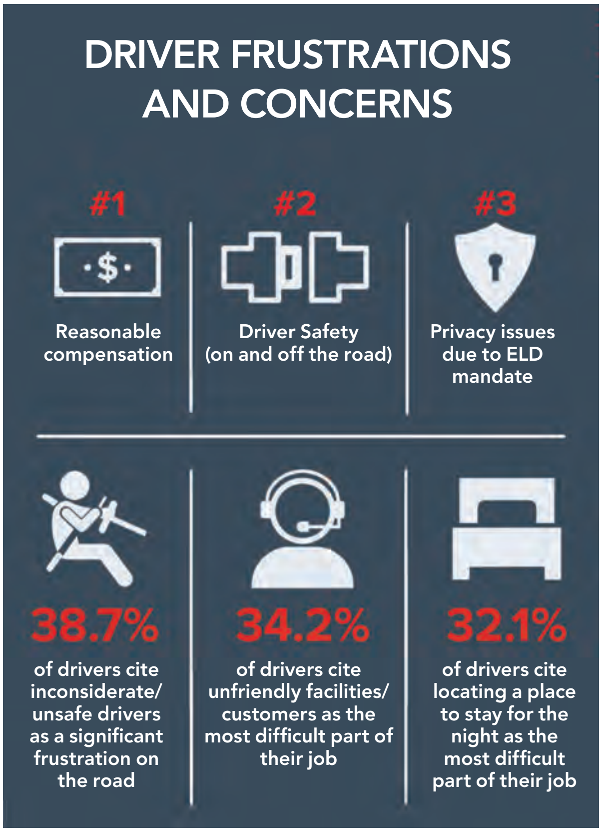
The results reveal 71 percent of drivers are frustrated over compensation, with 42.1 percent noting that competitive pay is the most important aspect of their job. Respondents also disclose concerns about safety on and off the road, with 38.7 percent citing inconsiderate/unsafe drivers as a significant frustration. Poor quality highways are a concern for almost 40 percent of respondents.

The ELD mandate has also considerably affected the workforce, with 71 percent of drivers experiencing an impact. Long-haul tractor-trailer drivers have felt the ramifications the most, with 85 percent reporting an impact. The mandate has led to fewer hours on the road for 71.8 percent of drivers. Privacy issues related to the mandate remain a job frustration for 55.9 percent of drivers.

To improve, organizations must nurture their relationships with drivers, as half of respondents note that a good relationship with managers and dispatchers is the most important aspect of their job. For 34.2 percent of drivers, unfriendly facilities/customers are the most difficult part of their job. Warehouse operators can also show more understanding toward drivers when it comes to mistakes and tardiness. According to 61 percent of drivers, warehouse operators can be better partners by being efficient with loading and unloading. Drivers are often seeking minor improvements in amenities, such as free Wi-Fi and a breakroom with snacks and beverages.

As the industry faces a shortage of workers, it is essential for organizations to identify areas that are impacting drivers and make improvements to address concerns and frustrations. Whether it be compensation, safety, shipper relations or offering amenities, listening to drivers creates an opportunity for organizations to improve their experience on and off the road.

— Todd Johnson, Senior Vice President of Transportation, Kenco



Source: Kenco and CarrierLists survey

AMAZON PRIMED FOR NEW REGIONAL HUB

In the first airport project of its kind in the Amazon Air network, the etailer has announced plans to open a regional air hub at the Fort Worth Alliance Airport in Texas.

Construction has already begun on the new air hub, which will create hundreds of new jobs. Unlike other gateways and facilities within Amazon Air's network, this regional air hub will be tailored specifically to Amazon Air's larger scale regional needs. The company is constructing the new facility with the future in mind–it includes sortation capability and infrastructure to handle multiple flights daily.

Projected to be operational in 2019, the new regional air hub will include daily flights. Amazon says its investment in the community will strengthen its presence in the Dallas-Fort Worth Metroplex and further serve its customer base.

Manufacturers Laser-Focused on Technology

Digital transformation is truly underway in manufacturing. While digital technologies such as cloud, mobile, big data and analytics, and Internet of Things have been industry drivers for years, manufacturers now have high expectations for the business value of technologies—edge computing, artificial intelligence (AI), collaborative robots (cobots), autonomous vehicles, 3D printing, augmented reality/virtual reality (AR/VR)—that are in earlier stages of adoption.

Forward thinkers are looking to innovate, change entire business models, and move into market adjacencies. That approach enables true competitive differentiation and sets up digitally transformed manufacturers for success in the near and long term.

The results of this shift can be seen across the value chain, in digital transformation (DX) initiatives such as the thinking supply chain, connected products and services, and Industry 4.0/smart manufacturing.

As all parts of the business continue to embrace DX, technology leaders and their counterparts in line-of-business (LOB) operations can consider the following 10 predictions to guide their strategic planning efforts:

1 Pushed by the success of early adopters, more than 40 percent of manufacturers will have enterprise-wide digital transformation initiatives in place by 2021.

2 By 2022, 35 percent of manufacturing organizations will have created new ecosystems by implementing AI- and blockchain-centric platforms, thus automating 50 percent of processes.

3 By 2022, driven by rising customer expectations and competition from the platform economy, 25 percent of manufacturers will be engaged in cross-industry collaboration, resulting in a 10-percent revenue increase.

4 By 2020, to increase speed, agility, efficiency, and innovation, 80 percent of manufacturers will need to extensively restructure, placing data at the center of their processes.

5 By 2021, 60 percent of manufacturers will have empowered shop floor workers with AR/VR, intelligent apps, and cobots, thus achieving productivity gains of up to 7 percent and more attractive work environments.

6 By 2024, more than 60 percent of G2000 manufacturing organizations will rely on AI platforms to drive digital transformation across the supply chain, leading to productivity gains of more than 20 percent.

7 By 2022, digital technologies will have enabled the automation of repetitive operational tasks, leading to 50 percent less planner intervention and "touchless" sales and operations planning.

8 By 2024, 50 percent of manufacturers will network related product and asset digital twins into digital twin ecosystems, for a systems-level view of their business and 5 percent reduction in quality costs.

9 By 2021, 90 percent of manufacturers will leverage real-time equipment and asset performance data to self-diagnose issues in advance and trigger a service intervention.

10 By 2023, 50 percent of the spend on DX initiatives in manufacturing will come from dedicated digital transformation budgets, instead of traditional IT or LOB budgets.

— Reid Paquin, Research Director, IT Priorities and Strategies, IDC Manufacturing Insights

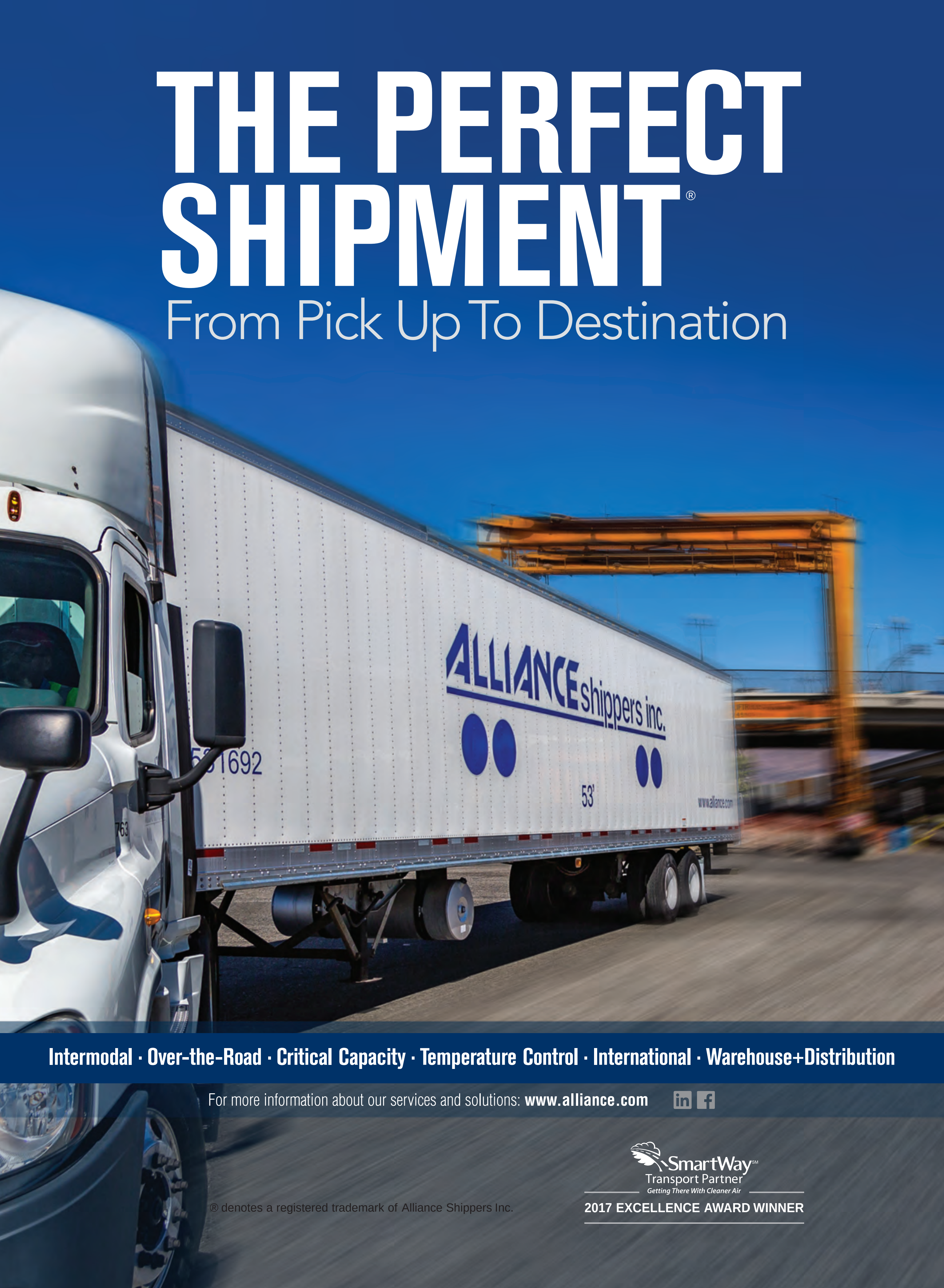
NS MAKES TRACKS TO ATLANTA

Norfolk Southern Corporation plans to move its headquarters from Virginia to Fulton County, Atlanta, joining other transportation heavyweights such as Delta Air Lines and UPS in leveraging Atlanta's major transportation hub. NS is investing $575 million in the move, which it says will create 850 new jobs.

In addition to its headquarters, the new campus will house dispatch operations, an operations and service support center, crew management center, corridor operations offices, national customer service center, administrative functions, marketing department and police communications center.

While the move to Atlanta has already begun, it will take several years for the new headquarters to be completed.

Norfolk Southern is shifting its headquarters from Virginia to leverage Atlanta's location as a major transportation hub.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2017 EXCELLENCE AWARD WINNER

What, Me Worry?

Manufacturing professionals are among the most aware of industry change due to automation, finds *The State of Intelligent Process Automation* from Nintex. The survey of manufacturing workers finds that 75 percent don't harbor concern for job security amid the rise of new technologies. In fact, 33 percent are worried these tools will make their jobs harder.

Manufacturers' greatest fear: The study provides insight to why manufacturing professionals may be skeptical of intelligent technologies: 35 percent have been in their jobs for more than 10 years, and 98 percent say moderate to deep expertise is necessary to carry out their roles. While these employees understand digitization's potential, they fear a negative impact—laziness. Indeed, 77 percent of manufacturing employees say artificial intelligence will make them lazy and cause them to lose their marketable skills.

The future: While automation can make work easier by eliminating mundane and repetitive tasks (for now), that doesn't mean lazy workers will multiply.

Many manufacturing pros still struggle to understand how AI technologies can supplement their hard-earned expertise to create the most efficient operations. Digital transformation asks manufacturers to re-evaluate their processes to increase productivity and use the technologies hand in hand with their years of expertise.

Manufacturing employees who choose to work in tandem with new technologies can direct their intangible expertise toward higher-level strategic tasks.

— *Ryan Duguid, Chief Evangelist, Nintex*

Pursuing Eco-Efficient Logistics

By Ray Hatch, *President and CEO, Quest Resource Management*

In 2019, expect sustainability to evolve into a critical priority. The transportation sector is already moving toward greener fleets, and pursuing innovative solutions to reduce waste and improve landfill diversion. The new year will bring even more pressure—and opportunity—to address eco-efficiency within logistics.

Robust sustainability programs come with many benefits beyond reducing environmental impact; at the same time, regulations are being introduced across the country to make adopting new practices even more urgent. Waste minimization and recycling programs reduce risk, decrease cost, provide actionable data insights and predictability, and provide a competitive edge.

The "green halo" that comes with transparent operations allows companies to promote themselves as stewards of the environment, helping retain existing business and acquire new customers. Sustainability is good business.

One example of maximizing efficiency is a closed-loop solution for used motor oil. Carriers collect the oil as part of normal maintenance, then transport it to a facility where it is cleaned, refined, and enriched with additives. Truckers send off used motor oil, and get back high-performance, heavy-duty synthetic blend motor oil that creates 85 percent lower emissions compared to refined crude oil.

RYDER REDEFINES THE SMART WAREHOUSE

Supply chain solutions provider Ryder System has successfully transformed its smart warehouses in the Miami, Dallas, and Chicago markets. The facilities feature the four technologies Ryder defines as definitive benchmarks of an effective smart warehouse:

Robotics. The implementation of robotics throughout one Ryder-managed warehouse produced a 25-percent increase in productivity and 20-percent operating savings, simply by reducing travel time in the warehouse, which can account for 30 percent of an employee's shift.

Drones. At a Ryder customer warehouse, drones successfully scanned pallets and locations in 20 minutes, compared to a manual scan that took 90 minutes. Additionally, a cycle count on the entire warehouse took just three hours versus two days. The drone can also identify available pallet locations and verify product placement.

Sensors. Identification tools provide real-time asset location and enable performance management. When implemented throughout a Ryder facility, productivity and cost savings increased more than 25 percent.

Wearables. When Ryder deployed smart glasses at a customer warehouse to improve picking processes, the time it took to pick and scan inventory decreased by five to seven seconds per item and improved efficiency by 33 percent.

Hot Tips to Stay Safe This Winter

"Slow the hell down and drive defensively." This is a crucial step in remaining safe on the road, especially during the winter months when driving conditions worsen, say executives at Lynden Transport.

As harsh weather and poor driving conditions are universal concerns for drivers and fleet managers across the country, Jim Maltby, corporate director of health, safety, security and environmental management, and Tyler Bones, safety manager of Lynden Alaska West Express, offer five tips for navigating the challenges of winter driving.

1. Have a clear 'Stop Work' authority program.

Work to identify fatigue and support drivers in their decisions to stay off the road. Empower drivers to make decisions. If a driver deems it unsafe to travel, then they should find a safe place to wait out the storm. Video-based safety programs, like SmartDrive, can help in identifying the issue before it becomes dangerous.

2. Plan the routes.

It's important to know the current weather conditions and forecasts for the area drivers are traveling through. Encourage drivers to travel on major highways as they're more likely to be plowed and maintained. Always be sure your drivers tell someone the route they're driving.

Work closely with your state truck association as they get weather forecasts immediately and distribute them just as fast. Be sure to post these forecasts in your terminals and email them to keep all parties informed. Keep your dispatch communications working and functional.

3. Encourage safe driving habits.

Encourage drivers to stay focused and keep their head in the game. Ensure drivers are practicing top notch safety habits while on the road, including avoiding distractions and keeping focus. Remind them to keep their cell phone charged but do not use while driving.

Train drivers to slow down and allow more space between them and the vehicles around them, as well as maintain more braking distance than they do in decent weather.

If bad habits persist, work to identify and target persistent bad habits with constructive coaching.

4. Check equipment.

Ensure drivers take extra time to conduct a thorough equipment check before heading out on the road. Be sure windshield wipers are in excellent condition. Remove built-up snow on tractors and trailers. Verify that there is plenty of fuel and all fluids are full. Check tires and make sure chains are in perfect condition. Confirm drivers have crucial survival supplies including enough food and water, as well as a flashlight. No matter where they are, truckers can face unexpected life and death situations.

5. Arm drivers with survival gear.

Remind drivers to be prepared for long delays. Have tool kits to ensure drivers can make field repairs so they can get to a safe haven. Have arctic gear–winter boots, coveralls, gloves, sleeping bags, portable heaters, water heater, etc. Stock up on food, water and dry goods. Check emergency survival kit to ensure everything is working. Be sure gear is readily accessible and ready to grab in case the driver has to abandon their vehicle.

COSTCO CHICKENS OUT

A handful of companies—think Tyson and Perdue—all but control poultry production in the United States. They'll soon be joined by a retailer known more for chicken sales than chicken production: Costco. The big box retailer is building a farm-to-table production system to ensure a steady supply of rotisserie chickens.

The center of the operation is currently under construction in Fremont, Nebraska, population about 26,000. Cement trucks come and go as crews line up concrete walls and steel beams for a processing plant, hatchery and feed mill. Around 100 new chicken farms in the area will be under contract to raise the birds.

When it reaches full capacity, the plant will process more than 2 million chickens per week. Some will become rotisserie chickens, and others will be sold as parts.

"All of our barns in Nebraska and Iowa collectively will supply about 40 percent of Costco's needs," says Jessica Kolterman, a spokeswoman for Lincoln Premium Poultry, a company Costco started to build and manage the project. "That will cover roughly the western half of the United States, Alaska, and Hawaii."

Costco sells approximately 60 million rotisserie chickens each year, Kolterman says. Building a system to stock its own stores is a way for the company to better manage supply and costs, especially because poultry companies are trending away from raising chickens to be sold whole.

—Fred Knapp/NET Nebraska

Ford Predicts the Trends Driving 2019

It is helpful to understand consumer behavior when crafting efficient supply chains. Ford's 7th annual *Trends Report*, which analyzes consumer behavior based on interviews with more than 13,000 people across 14 countries, provides some insight.

Ford says these surveys don't look just at behavior toward automobiles, but rather the factors that drive behavioral changes. For example, Ford finds that 87 percent of people think technology is the biggest driver of change, and 79 percent believe that technology creates positive change—it doesn't, however, cover the 21 percent of people who must think technology is a force for evil.

About 70 percent of respondents believe that humans should have a mandatory break from devices, and nearly half (45 percent) of all respondents admit that they envy people who can "disconnect."

According to Ford, here are seven trends that will make an impact in 2019:

1. Tech divide. While 87 percent of adults think that technology is the biggest driver of change, 46 percent of Gen Z respondents (that's the crop after millennials) fear that technology is trying to get in their heads.

• Nearly 70 percent of millennials would like to undo some of the behavioral changes they have experienced as a result of technology. Before you turn your nose up at the meddling kids, 53 percent of baby boomers feel the same way—that technology has changed them.

• 57 percent of millennials and 46 percent of Gen Xers think that artificial intelligence (AI) will be stronger than the human mind within 10 years.

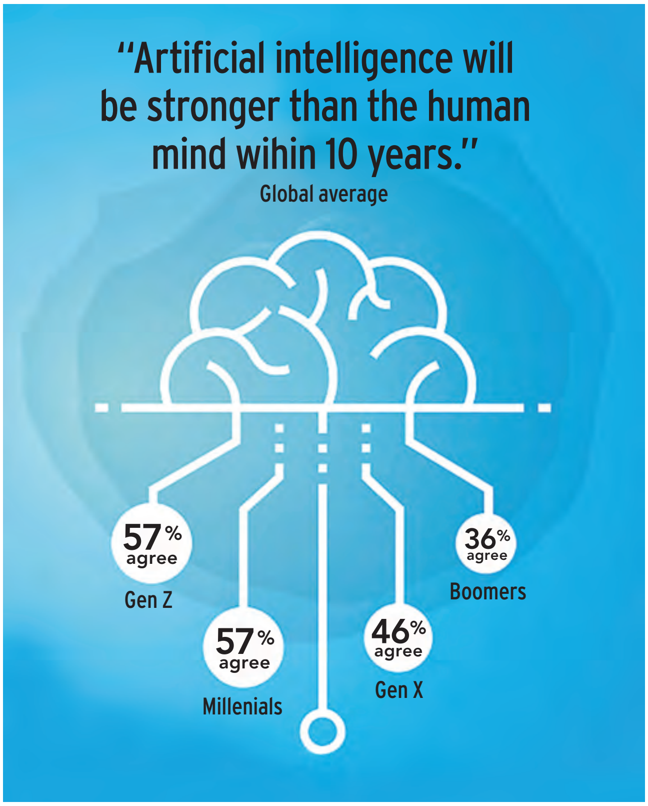
• 44 percent of all women and 37 percent of all men surveyed admit that they are afraid of AI, and even more people (48 percent of men, 39 percent of women) admit that they don't really understand it.

2. Digital detox. Just put down the phone. It sounds easy enough—and 45 percent of people are jealous of those who can actually do it— but 39 percent of Gen Z and millennials say they are addicted to social media. One quarter of the same groups say that they would rather lose their ability to smell than give up their devices.

3. Reclaiming control. In the past year, 84 percent of all adults have taken "small steps" to improve their lives, and all but 8 percent have stuck to their guns. Basically, researchers found that people want to and can improve as long as they don't bite off more than they can chew.

4. Many faces of me. Ford's study finds that identity isn't set, but rather dependant on our circumstances and environment. More than 50 percent of millennials and Gen Z say that they are more outgoing on social media; only 17 percent of boomers say the same.

• 84 percent of all adults say that people sugarcoat their lives on social media.



• A shocking 74 percent of Gen Z respondents think that people are fighting to stay relevant.

5. Life's work. Ford's findings reaffirm that employees' work-life balance is changing. For example, more than 60 percent of all respondents think that companies should reward employees for using all of their vacation time.

• 77 percent think that companies don't do enough to accommodate working parents.

• 84 percent believe that diverse opinions lead to positive change.

6. Eco-momentum. People are willing to make changes as long as they know that they would make a difference. About 56 percent of U.S. adults would change the way they eat if they thought it would help the planet, which is dead last when compared to the 13 other countries polled. The same is true when it comes to the number of people who consider the environmental costs of each purchase—again, U.S. respondents come in dead last.

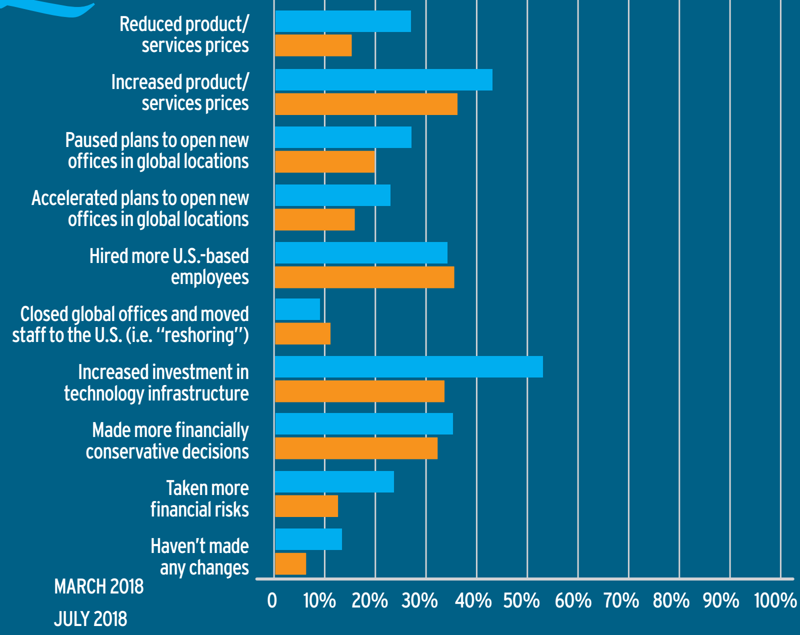
7. Easy street. Finally, Ford wanted to know how technology is changing transportation.

• 67 percent of all people think technology makes the commute less stressful.

• 43 percent of people in the United States think that self-driving cars will be safer than humans driving cars.

– David Mantey, ThomasNet

Q Which of the following changes have you made in response to the current administration's regulatory plans?



SOURCE: ECi Software Solutions

TECHNOLOGY POWERS U.S. MANUFACTURING RENAISSANCE

The impact of powerful forces such as digital transformation, Industry 4.0, the current regulatory climate, and automation on U.S. manufacturers is the focus of a new research report from ECi Software Solutions. The findings indicate the role technology is playing in the U.S. manufacturing resurgence, with 89 percent of respondents confirming they had increased technology investments in the past 18 months.

Other key findings:

Manufacturers turn to ERP to manage tariffs: 67 percent of respondents confirm that Enterprise Resource Planning (ERP) is either very effective or effective in managing the impact of tariffs, particularly by providing supply chain visibility, resource planning, and job costing.

Wearables have the potential to drive the most business value: In a similar survey conducted by ECi's Macola Software in 2017, manufacturers indicated that big data analytics had the highest potential to drive business value, while this year's respondents put wearables at the top.

AI is more than just a buzzword: More than half of 2018 respondents indicate that they're currently using some form of artificial intelligence (AI) in their operations; of those who don't use AI, 56 percent plan to in the future.

Automation is a job augmenter, rather than a job cutter: 73 percent of respondents indicate that their core business processes are automated by software and are reaping the benefits—most notably by reducing errors and improving accuracy, employee job satisfaction, and productivity.

Cybersecurity concerns prevent technology adoption: Half of manufacturers say they are concerned with the cybersecurity risks associated with adopting a new technology; they also list cybercrime as a top external force contributing to changes in manufacturers' business models or operations in the past 12 to 18 months.

Trends on the Horizon in 2019

The four trends that will have the greatest impact on operations in North America in the coming year, according to DHL Supply Chain:

1. Warehouse robotics come of age. Robotics are already proving their value in select warehouse applications, but the technology is expected to reach a tipping point in 2019. Expect the technology to have an impact that extends beyond e-commerce fulfillment.

The ability of the current generation of robots to work alongside humans while performing low-value tasks that increase overall warehouse productivity applies across a range of industries and warehouse tasks.

2. Increased uncertainty drives greater agility. In today's global and interconnected supply chains, new tariffs, renegotiated trade agreements and regional climate events can have a ripple effect that paralyzes an entire supply chain. This is making proactive supply chain planning more important than ever. Designing supply chains with the ability to flex to circumvent natural disasters or quickly re-configure to accommodate shifts in costs or material availability has become critical to maintaining high service levels.

3. Talent gets the attention it deserves. While the talent gap remains a significant challenge, solutions are starting to emerge, including using robotics to increase productivity. DHL promotes career opportunities available in supply chain management while helping prepare students to enter the industry.

4. Digitalization closes the transportation service gap and helps shippers think beyond today's shipment. Transportation will benefit from emerging digital solutions that will enable the industry to make better use of available resources and close the service gap.

Collapsing High Container Costs

The global shipping sector has a container problem. To be precise, it has a $30-billion container problem, and that price tag is increasing every year. In addition to their financial costs, empty containers congest deck spaces and crowd ports. And forcing ships to transport millions of empty containers around the world every year creates unnecessary pollution.

As global demand for shipping grows, our industry's container problem will only get worse—unless we do something about it. If we don't, we'll continue to pay billions of dollars to ship and store billions of cubic meters of air around the globe.

On average, 21 percent of transportation and port handling costs are wasted on empty containers. Here's just one example: Due to trade imbalances, 60 percent of containers on the Australia-China route are shipped empty. In addition to deck space, shipping companies must shoulder the costs associated with loading, unloading, storing, and transporting these mostly-empty container shipments.

Now let's factor in the environmental costs of shipping these millions of empty containers.

Start with the conservative estimate that 15 percent of containers being shipped are empty and that there are some 20 million containers in the global supply chain. That adds up to millions of empty containers being shipped every year, and millions of wasted TEU shipping capacities.

Those containers aren't carrying any freight, they are certainly on ships in motion, and we know that a moving ocean freight liner can burn through 16 metric tons of fuel per hour. In addition to running a six-figure daily price tag, that's a lot of pollution—at least 15 percent of which can't even be justified for economic purposes. It's a pure loss.

One large container ship emits about as much pollution as 50 million cars. Eliminate that 15 percent waste of space taken up by empty containers, and you take the equivalent of 7.5 million cars off the road per year with just one ship. Now add up all the ships in use right now and you start to get the picture.

I've been careful to keep my economic and environmental estimates on the conservative side because we're in an industry that doesn't appreciate hyperbole. Even so, the picture is quite dire and demands action—which means eliminating the space taken up by millions of empty containers. The industry needs to sit down and go back to the drawing table. Literally. Not to reinvent the container, but to redesign and make it collapsible when it's not in use.

Conventional wisdom has held that there has always been ample capacity on ships to carry containers. But that's not the whole picture. Accepting the empty container problem fails to account for the true costs. In addition to artificially inflating rates, failing to act demonstrates a lack of customer care by discouraging meaningful innovation and does not consider future trade growth.

The cost advantage of a collapsible container over a regular container is approximately 57 percent, according to a 2016 study conducted by Singapore University of Social Sciences,

While the upfront costs and annual maintenance costs are higher, the advantages of collapsible containers are higher yet, making them a viable alternative for carriers and lessors. When collapsible containers are applied to inland shippers and/or consignee locations, the benefits are even greater.

Due to the fact that four collapsed units can be joined to form a single container, the solution eliminates a significant portion of the costs associated with the inland repositioning of empty containers.

Collapsible containers significantly reduce the financial and environmental impact of managing empty containers on shipping line operations. We cannot continue to ignore the costs associated with the old way of doing business.

We need to act now to reduce transportation costs, save the environment, and ameliorate space constraints at seaports and shipyards.

–Nicholas Press, Managing Director and CEO, CEC Systems

FedEx Abandons Cuba Airfreight Service

Improved relations between the United States and Cuba have hit an impasse, leading FedEx Corp. to drop a plan to begin cargo flights to the communist country.

FedEx "will not be filing for an extension of the startup date for U.S.-Cuba cargo air service between Miami and Varadero," according to a recent statement. The company is abandoning its right to fly five weekly frequencies and evaluating "alternative all-cargo service options to Cuba," according to a letter to the U.S. Department of Transportation.

FedEx's withdrawal ends more than two years of effort to start service to Cuba, which began when former President Barack Obama sought to normalize ties with the island. Relations have chilled under President Donald Trump, whose administration enacted new restrictions in 2017 on Americans traveling to Cuba and on the ability to do business with a list of government-controlled businesses.

FedEx won U.S. approval for cargo flights to Cuba in 2016; in 2017, it cited a series of obstacles to starting the service, including finding local partners and securing airport ground services. The carrier currently lists Cuba as among the countries it doesn't serve.

Tariffs Sting U.S. Supply Chains

The tariffs President Donald Trump imposed on Chinese goods have caused sharp increases in expenses for some companies, and even businesses that have yet to feel the sting of the duties on imported Chinese goods are taking a closer look at their supply chains to see how they can minimize the damage.

As businesses scramble to find solutions, investors are watching closely to see how these changes are being handled.

The duties being charged for Chinese goods are affecting supply chains in a big way, especially for companies without the built-in flexibility to immediately begin sourcing elsewhere. Companies are forced to find a way to get out of China or absorb the costs.

Even businesses not utilizing Chinese goods directly are seeing higher prices on raw materials from China, as well as intermediate goods and final products that contain Chinese parts. And with today's increasingly interconnected global supply chain landscape, all supply chains will eventually feel the cost of these tariffs.

Even before the trade war, some U.S. companies were aiming to create more resilient supply chains, with timelines in place to minimize supply chain disruption by mitigating risks. The trade war has spurred many companies to reassess those timelines. Some key strategies companies have been using to deal with the tariffs include:

- Shifting production to other countries
- Applying for exemptions
- Raising product prices so that consumers cover increased costs
- Negotiating with Chinese suppliers to share the cost of tariffs
- Finding new raw material sources
- Reducing spend in other areas to help level off costs
- Simply waiting to see what will happen

On Dec. 1, 2018, China and the United States agreed to a 90-day cease-fire, but few details were provided, and China's media was hesitant to confirm the truce. The cease-fire leaves U.S. tariffs in place on $250 billion in Chinese products but eliminates Trump's threat to impose tariffs on all Chinese imports. It also removes his threat to increase tariffs from 10 percent to 25 percent on $200 billion of those products in January.

American companies have filed more than 11,000 exemption requests with the office of the U.S. Trade Representative.

There's no doubt that investors are taking note of how various companies are reacting to the tariffs. Where the affected companies go from here could make or break them, and investors are fully aware of that.

One Barron's analysis shows that supply chains were mentioned twice as often in third-quarter earnings calls for S&P 500 companies, implying that supply chain management techniques top of the list of concerns for many investors.

For many businesses, regionalization and nearshoring efforts are sounding more rewarding than ever for the long run, and even companies hardly affected are exploring the possibilities of bringing the supply chain closer to home. Lower energy costs and technological improvements that reduce labor costs can make these options even more attractive.

Thus far, many of the steps taken to offset tariffs have been short term. However, the impacts of the trade war have caused many companies to look harder at the resiliency of their supply chains. For many businesses, these tariffs have brought to light the various issues inherent in building a supply chain with only cost-cutting in mind. And with modern supply chains so interconnected in the intricate web that makes up today's global value chains, the ripple effect of these tariffs is even greater.

–ThomasNet

Panama Canal Keeps the Faith

The Panama Canal welcomed its 5,000th Neopanamax vessel through the waterway, reaffirming the value and impact the route has had on global maritime trade.

The* COSCO Faith *container carrier* (photo above) *transited the canal traveling southbound from the Atlantic to the Pacific Ocean. The vessel has a 13,345 total TEU allowance and measures 366 meters in length and 48.2 meters in beam. The* COSCO Faith *is part of Ocean Alliance's Manhattan Bridge-AWE2 service between Asia and the U.S. East Coast.

Of the 5,000 Neopanamax vessels that have transited to date, 51 percent have been from the container segment. Liquefied petroleum gas vessels constitute another 26 percent, and liquefied natural gas carriers, a relatively new segment to the Panama Canal, make up 10 percent. Dry and liquid bulk carriers, car carriers, and cruise ships make up the remaining transits.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TAKE TWO TABLETS

Two-thirds (66 percent) of retail store associates believe that if they are equipped with tablets, they could provide better customer service and improve the shopping experience, according to the results of Zebra Technologies Corporation's 11th annual *Global Shopper Study*, which analyzes the attitudes, opinions, and expectations of shoppers, retail associates, and retail decision makers.

Fifty-five percent of surveyed retail store associates agree that their company is understaffed, and nearly one-half (49 percent) feel overworked. Store associates cite frustration with their inability to assist customers—42 percent find they have little time to help shoppers because of pressure to get other tasks completed.

Another 28 percent claim that it's difficult to get information to help shoppers. Most surveyed retail decision makers (83 percent) and store associates (74 percent) concur that shoppers can have a better experience with technology-equipped sales associates.

Here are the key findings by region:

Asia-Pacific. Sixty-two percent of retail associates view their employer more positively if provided with a mobile device for work-related activities. Nearly half (49 percent) of retail associates say that mobile point of sale (mPOS) devices help them do their job better.

Europe and the Middle East. Seventy-four percent of decision makers agree that increased e-commerce is driving more interest in fulfillment solutions and warehouse investments.

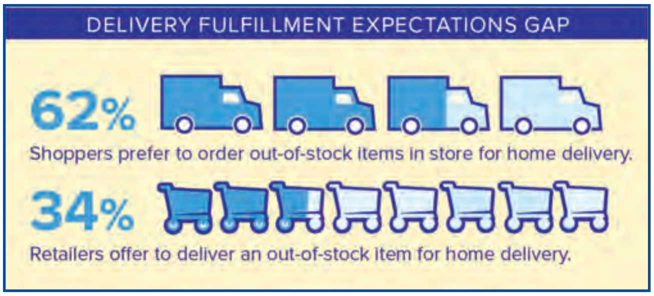
More than three-quarters (76 percent) of retail decision makers agree that accepting and/or managing returns of online orders is a significant challenge.

Latin America. Both shoppers (59 percent) and store associates (67 percent) believe that shoppers are better connected to consumer information than store associates.

Ninety-nine percent of retail IT decision-makers believe they need better inventory management tools to ensure accuracy.

North America. Eleven percent of shoppers completely trust retailers to protect their personal data, the lowest level of trust in any surveyed vertical industry, including healthcare, financial institutions, and technology companies.

Nearly seven in 10 store associates (68 percent) report that electronic shelf-labels would have a positive impact on the customer experience, and 54 percent of surveyed shoppers are likely to read them.



Port of Wilmington's Darling Clementines

***M.V. Ditlev Reefer* unloads a record cargo shipment of fresh Moroccan citrus at the Port of Wilmington, Delaware.**

The Port of Wilmington, Delaware, has set a record for the largest single shipment of fresh Moroccan citrus received by the port, with more than 1.75 million boxes of cargo.

This record volume was transported from Agadir, Morocco, to Wilmington onboard the specialized refrigerated vessel M.V. Ditlev Reefer*, arriving at the port Nov. 28, 2018. The cargo of easy-peeler clementines shattered the previous best mark by 37 percent.*

Moroccan citrus has been flowing through the marine terminal for 19 consecutive years in service to customer Fresh Fruit Maroc, fulfilling its role as a major port of entry and distribution center for the seasonal fruit imports. This includes the popular clementine and, as the November through March season progresses, the Nour and Nadorcott varieties.

The port stores the cargo in its 800,000-square-foot on-dock refrigerated warehouse complex before distribution to markets throughout the United States and Canada. The Port of Wilmington handled more than 10.7 million boxes of Moroccan citrus in the 2018-19 season.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OUR TRADITION.
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SUSTAINABILITY'S MISSING LINK

Economic performance is the top-ranking corporate sustainability priority for the majority of organizations, reveals a global survey of supply chain decision makers. When directly asked whether profitability or sustainability is more important, however, 60 percent give equal priority to these objectives, with another 25 percent leaning towards sustainability.

Conducted by the Economist Intelligence Unit, the research and analysis division of The Economist Group, and sponsored by LLamasoft, a supply chain optimization software and solutions provider, the survey of senior executives in 250 manufacturing and retail organizations across the United States, Latin America, EMEA, and APAC regions set out to explore supply chain approaches and priorities in relation to business sustainability, defined as the process by which companies manage their financial, social, and environmental risks, obligations, and opportunities over time.

When asked about the top drivers of supply chain sustainability in their organization, growth opportunities (36 percent), cost savings (34 percent) and the importance of responsible business practices (33 percent) head the list. Respondents are divided on whether supply chain sustainability has a positive or negative impact on cost, however, with increased costs cited as the largest impediment to supply chain sustainability and responsibility by 38 percent of respondents, especially those representing smaller businesses.

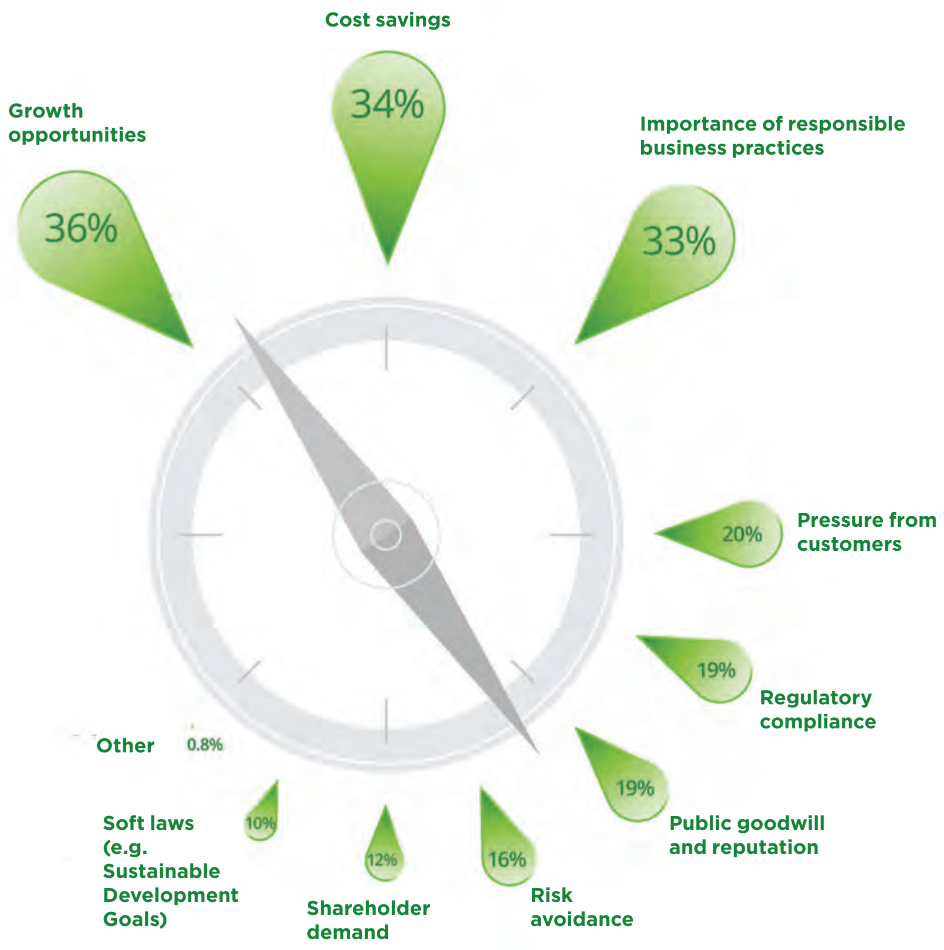
Respondents also cite difficulty in monitoring complex supply chains (29 percent) and organizational structures (24 percent) as barriers.

In North America, the survey finds a marked shift in priorities looking ahead to the next five years. When asked to consider their organization's top supply chain management priorities over the past five years, American and Canadian respondents rank reducing operating costs as the most important. Over the next five years, however, improving product quality is the number one priority.

Reducing environmental impact is also viewed as being more important over the next five years, increasing from 12.9 percent to 19.4 percent.

More companies are adopting sustainable supply chain strategies. What drives them?

(Percentage of respondents. Respondents chose all that apply.)



SOURCE: Economist Intelligence Unit/ LLamasoft survey

LOOKING FORWARD TO IT

Here are seven global logistics trends that will impact freight forwarding in the next few years.

1. Environmental footprint and sustainable solutions will become top of mind. The transportation industry plays a big part in greenhouse gas contributions. Having a sustainable agenda and bringing insight and solutions to help shippers lower their ecological footprint will move from a "selling point" to a must in order to remain relevant. The increasing sustainability focus will drive development on emerging technologies, alternative fuels, alternative supply chains via increased 3D printing, and cradle-to-cradle thinking in product development.

2. Automation, robotization, and AI have a big impact on logistics. Automation, robotization, and artificial intelligence (AI) are receiving more traction and use cases. Everything that we can automate and digitalize will become automated and digitalized.

Robotics is a huge part of this trend with a large focus on machine learning. Robots are becoming more intelligent not only in terms of pattern recognition and performing tasks but also in learning from data, making decisions, and adapting independently.

The intelligence aspect of machine learning is an important tool for the transport industry as it heavily relies on predictability and efficient logistics flows. There is no doubt that the growth of automation, robotics, and AI will have a dramatic influence on the transport industry and change the very nature of freight forwarding.

3. The Internet of Things is a key enabler for improving logistics value chains. The Internet of Things is a major trend that allows for communication between devices that are connected to each other through small sensors of various kinds. In essence, everything that can be connected and would have a value of being connected will be connected.

The sensors will collect, store, and exchange data, and make intelligent conclusions to act upon—without human interaction. Today, we see connected road vehicles, pallets, and shipping containers across the globe using data to adapt vehicle parameters to different routes and increase uptime of entire fleets.

The Internet of Things will become a crucial tool for freight forwarders to better control logistics flows, discover possible issues at an early stage, and solve problems. It is a key enabler for improving the entire logistics chains precision, predictability, and transparency. It will also assist in supply planning and combating emission levels.

4. Electro-mobility largely contributes to greener transportation. The development of electric vehicles and powertrain systems will rapidly develop as we move away from oil-driven fuel and toward battery-driven fuel. As new regulations come into force in 2020, we can also expect an increase in the use of eco-friendly fuel for maritime transport.

Electro-mobility will largely contribute to reducing the environmental carbon footprint in the transport industry as well as helping freight forwarders guide customers in making smart and sustainable decisions for their supply chains.

5. Blockchain technology has the potential to revolutionize logistics. By storing blocks of information that are identical across its network, the blockchain cannot be controlled by a single entity and has no single point of failure. The information is public, accessible to anyone online, and easily verifiable.

This new technology will revolutionize logistics by increasing transparency for freight forwarders, minimizing information disruption between multiple parties, and eliminating intermediaries, resulting in simplified and highly reliable supply chains.

6. Urbanization and consumption will strain city logistics. In 2030, about 60 percent of the world population is expected to live in cities. This leaves us with a number of challenges. As the population shifts from rural to urban residency, the consumption in cities will increase—as will the logistics flow in and out of cities.

We will see an increased focus on how to efficiently manage urban freight distribution, congestion, and noise as well as environmental issues such as emissions and air pollution. Self-driving vehicles will also contribute to turning around city logistics and new transport alternatives such as drones will be used to meet increasing e-commerce. Development and maturity of 3D printing will allow goods to be produced much closer to the consumer.

7. Cognitive skills, insight, and innovation become more important. With automation, robotics, and AI on the move, companies will need different competence profiles compared to what they previously have been used to. Jobs are going from "follow instruction and execute" to "collaborative and cognitive" in their essence. Analytics and technology savviness will become key traits.

In the past, knowledge of facts was a strength. It still is, but going forward, finding facts are a button click away. Employees need to be increasingly savvy with interpreting, analyzing, and conceptualizing information and collaborate around it. This requires employees with highly agile capabilities and who have a mindset of curiosity and constant learning. It also puts significant new demands on the type of leadership and maturity employees possess.

To remain relevant in an environment with much more enlightened customers, freight forwarding companies will have to go beyond traditionally relationship-based sales to more insight and innovation-driven sales. Forwarders need to truly become partners in improving customers' logistics and supply chain solutions to earn their space. What brought us here is not what will keep us here.

– Johan Jemdahl, Greencarrier AB

This section has been a perennial reader favorite and focal point of reader engagement for more than 19 years...and counting.

Assembling leading contributors and industry insiders, Logistics KnowledgeBase tackles the challenges confronting shippers today—from e-commerce fulfillment to tight capacity and supply chain disruption—and applies their considerable expertise and experience to provide insight and clarity.

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Solving the Three Toughest Challenges In E-commerce Fulfillment

Jim Gehr
President, Retail
DHL Supply Chain
North America

There's good news and bad news on the e-commerce front. The good news is that e-commerce is providing continued growth across a wide range of businesses, from retailers to manufacturers to distributors.

E-commerce is continuing to create opportunity for a range of businesses, but supply chain challenges can limit growth and compromise customer relationships.

Three Supply Chain Challenges Limiting E-commerce Growth

The bad news is that significant supply chain challenges will prevent some organizations from capitalizing on this opportunity. These include:

- **Managing Capacity.** The steady upward trajectory of e-commerce is putting a strain on existing resources and forcing companies to consider significant new investments in the face of an uncertain future. At the same time, demand on a week-to-week basis can be volatile, stretching scarce human resources to the breaking point and reducing customer service. E-commerce fulfillment must be able to both flex with short-term fluctuations and scale with sustained growth. Few supply chains can meet those dual requirements.
- **Meeting Customer Expectations.** Today's e-commerce customers have higher expectations than those of even a few years ago and those expectations will only increase in the future. Two-day delivery will almost certainly be compressed to next-day or same-day delivery. Organizations struggling to meet today's requirements risk being left behind by competitors who are able to consistently meet these changing expectations.
- **Minimizing Complexity.** Inventory management, order processing and shipping all get more complex when e-commerce is introduced. In addition, integrating e-commerce fulfillment into traditional distribution operations to provide multi-channel distribution further adds to the complexity in support of omni-channel retail sales. Dealing with complexity can distract businesses from focusing on serving customers and achieving long-term objectives.

Three Challenges, One Solution

Many organizations lack the combined experience, expertise and resources to efficiently manage the speed, volatility and complexity of e-commerce fulfillment. One organization that can is DHL Supply Chain.

With e-commerce experience stretching back to 2005, combined with an organizational commitment to operational excellence, DHL Supply Chain can provide flexible capacity through dedicated or shared-use networks designed to reduce costs and support fast delivery. Our optimization processes and smart use of emerging technologies simplifies e-commerce management, reduces order cycle times and shortens the time order clicks can be fulfilled for targeted delivery expectations. Finally, we're making the investments today in both the facilities and emerging technologies to meet the customer expectations of tomorrow.

The challenge of enabling e-commerce fulfillment capacity efficiently can seem overwhelming, but it is very achievable with a focused solution. For more information on DHL e-commerce fulfillment services, visit dhl.lookbookhq.com/ao_sector_retail

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logistics.dhl.com

Customs Broker vs. Freight Forwarder: Use a Customs Broker for Added Compliance

Jack Bender
Director of Sales
and Marketing
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Why do some businesses choose to work with one company to manage their freight forwarding and another for Customs brokerage? The answer is they think they will pay less.

Negotiating rates with two separate providers may seem a better strategy. However, hidden costs, delays, or confusion between the different parties can quickly wipe out any savings.

Sole Responsibility

Many freight forwarders rely on partnerships they've developed with other companies to provide Customs brokerage.

Choosing to work with two different companies who have very different roles to play–Customs brokerage and freight forwarding–can be problematic. For example, if miscommunication or operational coordination issues ensue, the shipment could be delayed leaving the container terminal and then incur demurrage fees, which makes it easy for the two companies to point the finger at one another instead of solving the problem.

When you're in a situation like that, knowing who to blame doesn't matter as much as knowing who's going to fix it. Working with a full-service Customs broker for your freight forwarding will increase accountability.

Consistent Point of Contact

Ever had to deal with a large company's customer service department in your personal life? It can be frustrating to be passed from one person to another without receiving a clear answer to your question.

Having a consistent point of contact that is familiar with your account, your product, and your business, can help you avoid a lot of headaches associated with importing. Having a rotating set of customer representatives is the scenario least likely to result in solid communication with your freight forwarding partner.

Having a consistent point of contact that is familiar with your account, your product, and your business, can help you avoid a lot of headaches associated with importing.

Avoid Variable Pricing

Choosing a freight forwarder or Customs broker based on price might not be the best strategy long-term. Creating a bidding war between two companies seems like a smart tactic, but you may end up with a quote that is far more optimistic than it is realistic.

The shipping industry hinges on fixed costs and strategic margins. It's rare to encounter a significant cost difference between two companies who are being honest about their pricing. There's a lot of potential for additional fees when you don't carefully review your quote. If you ask the right questions, you should be able to see through any unduly favorable pricing.

Apples to Apples

When evaluating the performance of your freight forwarding partner, you'll want to compare apples to apples.

If you're working with multiple companies, it can be challenging to identify weaknesses unless you have a pre-determined benchmark. Working with a single company means you can manage performance against a standard procedure, not to mention the predictability of the experience.

Lower cost options may come with less service than the slightly higher priced option, and you may ultimately lose money on an attractively priced quote.

Using one qualified company for Customs brokerage and freight forwarding reduces the logistical work on the customer's end, while also making it easier to achieve Customs compliance and an optimal experience from pick-up to delivery.

The Game Has Changed – Time for a New Playbook

John Richardson
Vice President
of Supply Chain
Analytics
Transportation Insight

John Richardson is Vice President of Supply Chain Analytics for Transportation Insight, an Enterprise Logistics Provider engineering technology-enabled, data-driven supply chain solutions that achieve significant cost savings, reduce cycle times and improve customer satisfaction rates. He has spent 20 years employing advanced analysis techniques to help companies across a broad range of industries optimize network design and improve business performance.

Evolving e-commerce service expectations force traditional retailers, manufacturers and distributors to rethink their strategies for serving clients. A two-day delivery normal–at little or no cost to the end consumer–pressures every supply chain stage, from raw material components to the finished product traveling the last yard to the customer's hands.

Retailers competing to deliver on service levels embodied by an Amazon experience expect their business partners to accelerate the flow of order to production. Manufacturers respond by adjusting practices to meet the needs of retail clients and seize growth opportunities that exist in directly serving end consumers. Direct fulfillment capabilities need retooling to deliver with excellence while maintaining profitability targets. In an age when consumer demand dictates the need for multiple distribution channels, is your supply chain equipped with the expertise and the flexibility necessary to not only survive but thrive?

While demands for service and speed of delivery propel organizations trying to ride the e-commerce wave, other challenging currents exist.

- E-commerce shipment capacity consumption influences an already tight capacity marketplace.
- International trade uncertainty around tariffs, trade agreements and security prompts global enterprises to explore nearshoring or onshoring.
- Trending technologies hold promise for the future of data visibility, but validating information accuracy and gleaning actionable intelligence impedes efficient network design.

In an ever-changing business environment, the days of maintaining a static supply chain strategy are over. According to the 2019 *Third-Party Logistics Study*, about 51 percent of responding shippers recognized the need to implement new supply chain approaches. Yet, 42 percent of those shippers have not made significant changes to improve operational agility within the past four years. Without a robust technology platform complemented by engineering expertise and deep logistics industry knowledge, many organizations are ill equipped to determine the best transportation strategy to serve the demands of their particular customer base.

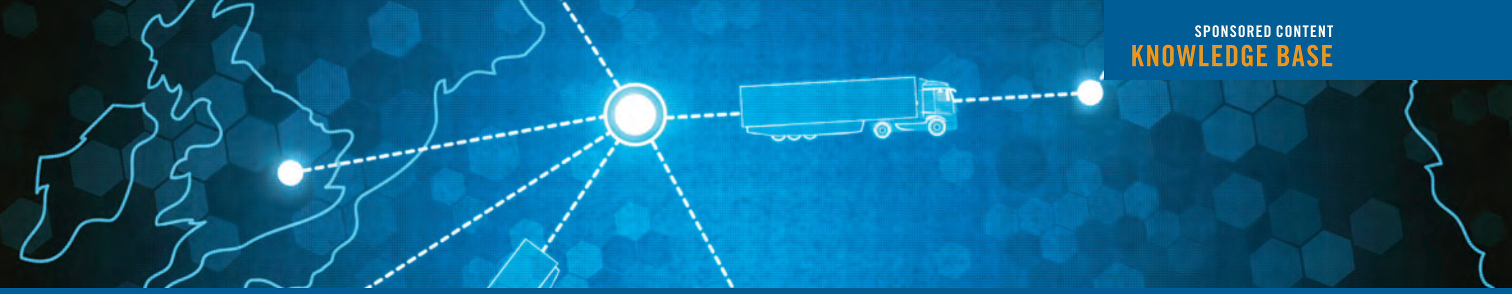
Delivering an optimal customer experience requires a new perspective on supply chain design that considers product intricacies, unique consumer traits and enterprise goals. Shippers need a playbook that charts a strategy for obtaining better operational understanding while improving processes that most directly affect customer satisfaction. Key components to a winning game plan include:

- Collecting, managing and analyzing supply chain data as the foundation of descriptive and predictive analytics that underpin AI-driven prescriptive transportation modeling around alternative alignments;
- Utilizing dynamic routing to determine least cost configuration for getting shipments to the customer;
- Recognizing total landed cost for each SKU offering and customer to determine item-level profitability and identify supply chain levers that can generate more return;
- Coordinating a diversified transportation strategy that combines all delivery options, utilizing the strength of each mode;
- Engineering an omni-channel environment that shortens the lead-time to customers through a central view of inventory, increased data accuracy, efficient offering and optimal inventory placement.

Flexibility in offerings and speed to deployment are key, but companies cannot sacrifice visibility of shipment analytics. Without capital outlay for best-in-class transportation management and data analysis technology, organizations lack supply chain tools integral to effectively measure service and profitability. Managing all supply chain processes within the single operating environment of a trusted adviser integrates analytics-based optimization with a qualitative human element that brings:

- Cross-disciplined experience;
- Entrenched relationships essential to effective multi-modal transportation execution;
- Lean-based mindset at the foundation of continuous process improvement.

With that partner in play, business enterprises gain access to the benefits of a new playbook and the promise of constant strategy calibration required to keep pace in the race to serve every client with excellence.



Using Collaborative Technology To Tackle the Carrier Capacity Crisis

Ed Moran
Managing Director and Senior Vice President, Sales & Marketing
Transporeon Group

Collaborative transportation solutions help both shippers and carriers automate manual processes and gain crucial supply chain visibility.

Technology is the great enabler of collaboration. When it comes to domestic transportation, efficiency-enhancing collaborative technologies allow everyone–the shipper, their carriers and their customers–to thrive, even in a challenging capacity environment. By automating processes relating to transportation, these solutions free up capacity and help keep drivers on the road by minimizing detention and dwell time, and allow drivers to stay in line with Hours of Service regulations.

Technologies designed to alleviate challenges and uncover capacity

Collaborative technologies can be used to reveal backhaul opportunities in the online or digital spot market and allow carriers to select and schedule their own appointments. Giving carriers the ability to plan more efficiently and in advance helps them potentially avoid deadhead miles by finding and picking up another load. Full truckload shippers leveraging Big Data from transportation management platforms with a vast connected network across a global shipper-carrier community can now match their demand with available carrier capacity to significantly reduce expensive and inefficient deadhead runs. By shippers communicating directly with the asset owners, loads get filled more efficiently leading to fewer empty miles, which in turn reduces carrier operating costs and may then be reflected in more competitive rates.

There are also technologies that have been specifically created for transportation procurement to uncover hidden carrier capacity. These proactive sourcing technologies connect shippers to carriers that serve specific lanes or modes for industries that may call for specialized equipment. By running your own bids in a completely neutral fashion, digital sourcing technologies allow shippers to negotiate directly with their pool of incumbent and new carriers while also maintaining direct relationships with those carriers. Relationship-building can go a long way in times of tight capacity.

Enabling carriers to plan resources efficiently

Carrier idle time, which includes the on-site time that drivers are waiting to get loaded because of an unscheduled arrival or an unprepared dock, has also been a contributor to the capacity crunch. Every hour a carrier spends waiting to pick up or deliver a load is one less hour that driver can spend on the road.

One solution that benefits both shippers and carriers alike is dynamic time slot management or dock scheduling. These solutions are created specifically to handle complex loading logic and can help shippers share realistic schedules with their carriers. When carriers are able to plan more precise time commitments at a shipper's premises and shippers honor those time commitments, carrier idle times can be reduced significantly. It also keeps both shippers and carriers focused on loading/unloading times, with the goal being to let drivers head out as quickly as possible.

Make collaboration work for you

Manufacturers, suppliers, and retailers of all sizes are still finding it increasingly difficult to secure carrier capacity. Collaborative transportation solutions can strengthen logistics operations by helping both shippers and carriers automate manual processes and gain crucial visibility. Collaborative technologies do more than allow shippers to work more closely with their carriers to reduce costs and save drivers time–they are also crucial in combating the inefficiencies that have contributed to the current capacity situation.

Leveraging Logistics Communities To Find Capacity in a Tight Market

Dan Clark
Founder and President

Companies that leverage logistics communities will be able to secure much needed capacity in a tight market.

Finding truckload capacity is on everyone's minds as the capacity crunch and driver shortage worsens. In fact, the Kuebix team surveyed over 550 logistics professionals in December 2018 to find out what they believed would be the biggest challenge for supply chains in 2019 and the capacity crunch/ driver shortage easily scored the highest with 44% of the total votes.

There are a number of factors causing the capacity crunch and driver shortage. A combination of fewer drivers and more deliveries is putting strain on a system which hasn't seen major changes in 50 years. According to the Bureau of Labor Statistics, the average age of a truck driver is 55, which means many drivers are quickly approaching retirement age. Unfortunately, millennials aren't filling driver positions vacated by retiring Baby Boomers as quickly as retirements occur despite competitive pay.

The growth in popularity of e-commerce shopping has also added to the capacity crunch. There has been a societal shift where consumers have become used to extremely fast and inexpensive shipping. This trend is known as the "Amazon Effect," referring to the overwhelming popularity of Amazon Prime's free, 2-day shipping.

Today's consumers want to have complete visibility to their orders, get deliveries in record time, and pay less for shipping. Companies need to keep customer expectations front and center in their business plans, an expensive and difficult proposition for supply chains. All of these trends combine to result in fewer trucks on the road when more capacity is needed.

Fortunately, there is capacity available out there for those who know where to find it. Companies that leverage logistics communities will be able to secure much needed capacity in a tight market. The key is tapping into a vast logistics network with the ability to match freight with available capacity.

Consider Uber or Lyft's business model. These apps connect people who have cars and are willing to give rides to people who need rides. Technology powered logistics communities can work in much the same way by connecting freight shippers to carriers, brokers and fleets with available capacity. Now, instead of aimlessly calling or emailing carriers on a contact list, shippers have a streamlined and efficient method to find trucks to move their freight.

The easiest way to integrate finding truck capacity with day-to-day logistics operations is to leverage a transportation management system (TMS) with a built-in logistics community. A TMS with a broad user base and a vast network of truckload assets can easily connect shippers with available capacity from the same platform they use to rate, book and track negotiated carrier rates.

When opportunities to collaborate are leveraged by using a TMS' logistics community, everyone wins. Carriers, brokers and fleets fill trailers that would have otherwise ridden empty and shippers speed up operations, save money, and provide better service to their customers.

The supply chain industry faces many hurdles in 2019, but companies that plan ahead and leverage online logistics communities powered by a TMS will be well-positioned to meet their customers' expectations.

Mobile Warehousing & Storage: The Warehouse Manager's Secret Weapon

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Low-cost, well-maintained trailers can readily supply needed warehouse flex space to meet the rising demands in the evolving supply chain.

The supply chain as we know it is undergoing massive and constant change. This change can cause uncertainty, but it also creates an opportunity for new ideas and unlikely partnerships to solve challenges we collectively face within the industry.

One of the biggest challenges facing supply chain managers is the ability to effectively use warehouse space. E-commerce delivery expectations, warehouse availability/locale and preparation for supply chain disruptions make effectively managing warehouse space efficiency an arduous task.

Over the past several years, the Amazon-effect of B2C commerce and now B2B commerce is putting tremendous pressure on reducing delivery latency. Two-day delivery is now same-day delivery, and the pressure to reduce that timeframe continues. The consumer demand for rapid delivery requires retailers and distributors to change the way they think about logistics real estate. To meet the expected delivery timeframes, a more dispersed inventory, including a wider selection of products and availability, is required. This means warehouse space across a wider geographical network is a requirement to fulfillment success.

Warehouse space constraints have become a hurdle for the supply chain and management of goods and inventory in relation to delivery demands. Selecting the right property in the right location can be critical to an operation. Investments, whether through capital expenditure or term lease commitments, are a costly endeavor when the landscape is changing so rapidly. To complicate matters, warehousing is moving from low-cost outlying areas closer to the end-user to reduce delivery costs and timing for the last-mile. The lack of space can significantly impact a retailer's supply chain performance and overall viability.

In addition to managing warehouse space cost effectively, a supply chain manager needs to prepare for seasonal flex of inventory, weather disruptions, pricing volatility and the growing reverse logistics of inventory. Managing these risks within the supply chain environment considering warehouse space is constrained is a near impossible task. Having a contingency plan for potential disruptions ensures the right goods are delivered at the right place at the right time.

Low-cost, well-maintained trailers can readily supply needed warehouse flex space to meet the rising demands in the evolving supply chain. They can serve as temporary storage, assisting in staging inventory from warehouse space to more densely populated urban areas. It's a warehouse on wheels allowing flexibility to meet changing demands in the supply chain. To improve warehouse utilization and efficiency, dry van trailers can be a cost-effective solution, allowing manufacturers, retailers and distributors to rapidly (in 24 to 48 hours) flex up their warehouse space on a month-to-month basis and at costs savings of 50% over traditional warehouse space. Securely storing trailers off-site provides another option to stage and control overstock goods or packaging materials.

The Unusual Suspect: Supply Chain's Role in Recent FDA Recalls

Brad Hollister
CEO
SwanLeap

How the TMS should evolve to increase end-to-end transparency and centralize your supply chain's data

2018 brought its share of FDA recalls issued as desperate attempts to prevent further danger – danger technology should be able to pinpoint and prevent. Between the deadly E. coli outbreak from romaine lettuce to the massive salmonella outbreak linked to eggs, the FDA had their hands full investigating these large-scale public emergencies.

The Farmers Are Merely the Scapegoat

Let's state the obvious. The issue of food contamination is not a farmer problem, though they certainly have felt the brunt of the blame for the outbreaks. According to *The Republic* (Arizona), Bradley Sullivan (attorney specializing in Agricultural Contamination cases) said, "Everybody wants to know where it came from. I feel bad for Harrison Farms, because they are going to get blamed for the whole thing." But here's a question: how do you produce bad eggs or grow bad lettuce?

Is this really an agricultural problem or supply chain problem? As a society we have moved beyond using static information to make decisions related to the health and well being of humanity. Yet supply chains, which deliver critical items, are still being driven by a table-based, business rule infrastructure to make decisions without taking into account things like driver quality, previous loads carried, when the truck was last washed, or where the truck went after the pick up at the farms.

Is the problem more likely that the farmers grew bad produce or that the lettuce was floor loaded onto a trailer contaminated with bacteria? This wasn't a produce problem, this was a shipping problem caused by a lack of adequate transportation management.

The Real Cause Is Inadequate TMS Technology

To understand the problem we must understand why the antiquated supply chain industry is to blame. Since its inception, the job of a TMS was to assign a carrier from a pre-decided table and close out the order at the end of the lifecycle as the goods were shipped. No data captured. No visibility. No tracking. No Analytics.

Supply chain visibility is no longer a luxury. People's lives depend on TMS technology to deliver more than simply rate shopping multiple modes, consolidating loads or putting together a dashboard.

Dated technology companies claim to be introducing cutting-edge concepts like blockchain, AI and cloud servers. But it's one thing to mix these words into your marketing materials and another huge leap to actually execute. The functionality needed by tomorrow's supply chains cannot be performed in outdated technology infrastructures such as SQL databases – which is the chosen technology strategy of every 'leading' TMS technology recognized by analysts in their annual reports. Many of these technologies were architected before mobile phones were even sold.

If supply chains were truly leveraging cutting-edge technology, these deadly events could have been mitigated, if not prevented. The industry is demanding more from today's leading technology companies and the world's leading TMSs cannot support the complexity of real-time visibility in a completely digital and integrated supply chain.

While we can't definitively say the TMS killed anyone, we can say that the supply chain technology lacked the infrastructure required to protect people by locating, or even preventing, contamination. The role of the TMS must evolve as the center of a company's data infrastructure – leveraging AI and flowing information from vendor performance, purchasing decisions, shipping details, customer service, financial decisions, customer profitability, sales policies and more.

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Driving Disruption: Planning for the Future of Logistics

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If things aren't evolving in your supply chain to make room for operational improvement, it's time to think about it and plan for it.

R*oyal Oak, MI* – They're popular buzzwords industry-wide. Technology, innovation, disruption – you hear them often and in various context. But what do they really mean for your supply chain and your business?

Industry standards have been set based upon antiquated systems. This leaves the industry caught between legacy processes and a growing need for real-time information.

"Technology capabilities are evolving dramatically faster than general adoption in the logistics industry," said Chief Information Officer, Frank Soehnge. "From automated electronic ordering, real-time truck tracking and automated delivery notification, the technology is there, but the standard industry adoption is still way behind."

Businesses worldwide are overcoming roadblocks created by legacy technologies, manual processes, lack of visibility and lack of collaboration. If things aren't evolving in your supply chain to make room for operational improvement, it's time to think about it and plan for it.

"We take for granted the technology available when we order from Amazon," said Soehnge. "The general logistics industry simply has not caught up with the revolution that is happening. At the end of the day, if you want to be in business tomorrow in logistics, a strategic path to implement these technologies is critical."

Long-term strategic planning and a shift in focus will make a significant impact on the future of your business. Understanding current technology and tech trends that will disrupt and change the way logistics is done today – will allow you to pivot in a way that is realistic to plan for tomorrow.

"Look at technology that will enable operational efficiency," said RPM Chief Commercial Officer, Jake McLeod. "This can be something as simple as addressing inefficient route planning or poor truck utilization."

From apps and robots to artificial intelligence and autonomous vehicles, technology continues to move at a rapid pace. This tech will ultimately replace a good portion of the human element that moves the industry today – eliminating the risk of mistakes and wasted dollars.

"We will see a big push for warehouse efficiency. Loading and unloading trucks quickly will continue to be a way to help reduce cost," said McLeod. "With ELDs now firmly in place and limited hours of service available, current shippers and consignees who are not efficient are going to find themselves short on capacity and paying above market rates."

How businesses plan for market shifts, future tech developments and the use of technology available today, is the key to developing the proper strategy for your supply chain. According to McLeod, customers should have started planning for 2020 in 2017. But it's never too late to start.

"Technology has allowed companies to run leaner than ever," said McLeod. "Carrying no inventory is possible by complex scheduling software, material planning software and transportation tracking software. This has created huge savings for manufacturers."

A few years from now, the logistics industry will look very different than it looks today – most likely adapting to and utilizing high-level algorithms, big data, and early versions of smart programs like artificial intelligence (AI) and machine learning.

"The technology of tomorrow will not only help track inbound freight, but align available capacity in conjunction with these deliveries," said McLeod. "Creating less deadhead and discovering better utilized equipment for a particular load."

Preparing for a future that is more reliant upon technology should remain a priority for companies worldwide. Failure to plan for this will be a critical mistake for players in the logistics industry.

"The pace of advancement and expectation is faster than ever before in our lifetimes," said McLeod. "Knowing where freight is at all times is becoming a reality. The Amazon Prime effect, with the ability to track and know exactly where items are, has become a normal expectation for customers. This is the future of the logistics industry."

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How Shippers and 3PLs Can Better Manage the Global Cargo Chain's First Mile to Last Mile

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E-commerce has caused an explosion in shipping volumes worldwide. The pressure is on to implement omni-channel fulfillment to ship anywhere, from anywhere, and achieve faster delivery while controlling the cost of "free" shipping. We talked to three experts from the WiseTech Global family of companies to understand how shippers and 3PLs can improve their "cargo chains" spanning first-mile pickup, cross-border consolidation, and deconsolidating into last-mile parcel carrier networks.

How are the demands of omni-channel affecting global shipping?

Archival Garcia: Omni-channel is all about choice for the customer. Choice in brands, choice in products, and choice in service. As a result, there is increasing competition for cart and shelf space as retailers increase their product portfolio and niche players become established options. This demand will require more products to be managed – in more facilities and across more regions.

Shippers are being asked to serve more complex requirements and provide more value-added services. There is greater demand to break down full pallets to pre-allocated orders for both stores and DCs to decrease costs of handling and accelerate service. Collaboration across suppliers and retailers will mean more drop shipping and loose pick, case pick warehousing – not just inventory management.

There is pressure to reduce costly assets like warehouses and trucks, resulting in more cooperation among companies to share supply chains. Retailers and larger corporations can set up 3PL-like supply chains to serve multiple brands with a greater focus on the costs to serve and profitability across the supply chain and not just the retailer side.

What challenges do shippers seeking a global supply chain solution face?

Kenneth Pehanick: Each leg of the cargo chain has its own unique nuances that can't be handled with one set of business rules. Mode-specific rules help eliminate manual workarounds, increased costs, and service issues. LTL is no exception. The ability to apply rules to LTL legs will enable shippers to take advantage of a best-of-breed approach across the entire cargo chain.

Integration is also key. The ability to connect and share important data elements is critical to providing an automated workflow. LTL is often misunderstood in terms of what is required for integration, and if not managed properly, can result in cost and service impacts.

Other critical factors for LTL in the overall supply chain are availability of key data elements such as class and/or dimensions, ability to communicate with multiple carriers simultaneously and quickly, and ease of maintenance and implementation.

What technology challenges exist for 3PLs looking to incorporate multi-carrier parcel shipping capabilities to their global cargo chain initiatives?

Bob Malley: First, parcel isn't like freight. Parcel lacks standards related to rating, documentation, and tracking. Parcel volumes are often 20x higher than freight volumes, so integration and automation is a priority. Sub-second rate processing speeds are a must.

Secondly, 3PLs need to account for customer-specific automation requirements, such as integration, business rules, rates, and documentation. They will need one TMS platform that can adapt to the needs of each customer and change as their needs change, without having to manage or customize multiple platforms. A federated TMS architecture provides one unified point of control, but diversity when it comes to customer requirements.

Lastly, the capacity crunch is making intelligent containerization a must. Carriers want to cube out their vehicles and are applying surcharges to shipments that make poor use of space. Shippers will need to stop guessing and use cartonization, palletization, and containerization technology to make cost-effective packing decisions.

LEAN SUPPLY CHAIN

BY PAUL A. MYERSON
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Riding Out the Rapids

It seems that we are moving from crisis to crisis—tariffs, a plummeting stock market, cyber-attacks, recalls—at an ever-increasing pace. While we can't avoid these crises, we can minimize their impact with a lean, agile supply chain.

While that's easy to say, it's hard to do. Some key components to focus on include:

Supply chain visibility, both downstream and upstream. Better information sharing and collaboration with business partners and customers, along with a strong use of analytics, can help anticipate and minimize the impact of disruptions.

Supply chain network optimization. Reduce network complexities and improve responsiveness to customer needs by optimizing asset locations across the supply chain. Develop an ongoing capability to evaluate business and environmental changes that affect the supply chain to increase flexibility while reducing costs and improving customer service.

Identify and mitigate risk. Global supply chains face increased risks from demand and supply variability, limited capacity, and quality issues. Identify the sources and types of potential risk and estimate their probability and impact. Then create and implement risk mitigation plans to minimize their impact.

Strategic sourcing formalizes the way organizations gather and use information to leverage consolidated purchasing power and find the best values in the marketplace. Sourcing strategies include outsourcing, insourcing, nearsourcing, few or many suppliers, and vertical integration.

Instead of a Crystal Ball...

While it's difficult to predict the future, you can find help in a variety of ways:

Big data and predictive analytics can potentially provide insights that help anticipate or respond to events or disruptions.

Cloud technology and the Internet of Things (IoT) are expected to remove physical boundaries and create a centralized system thereby increasing supply chain efficiency and productivity.

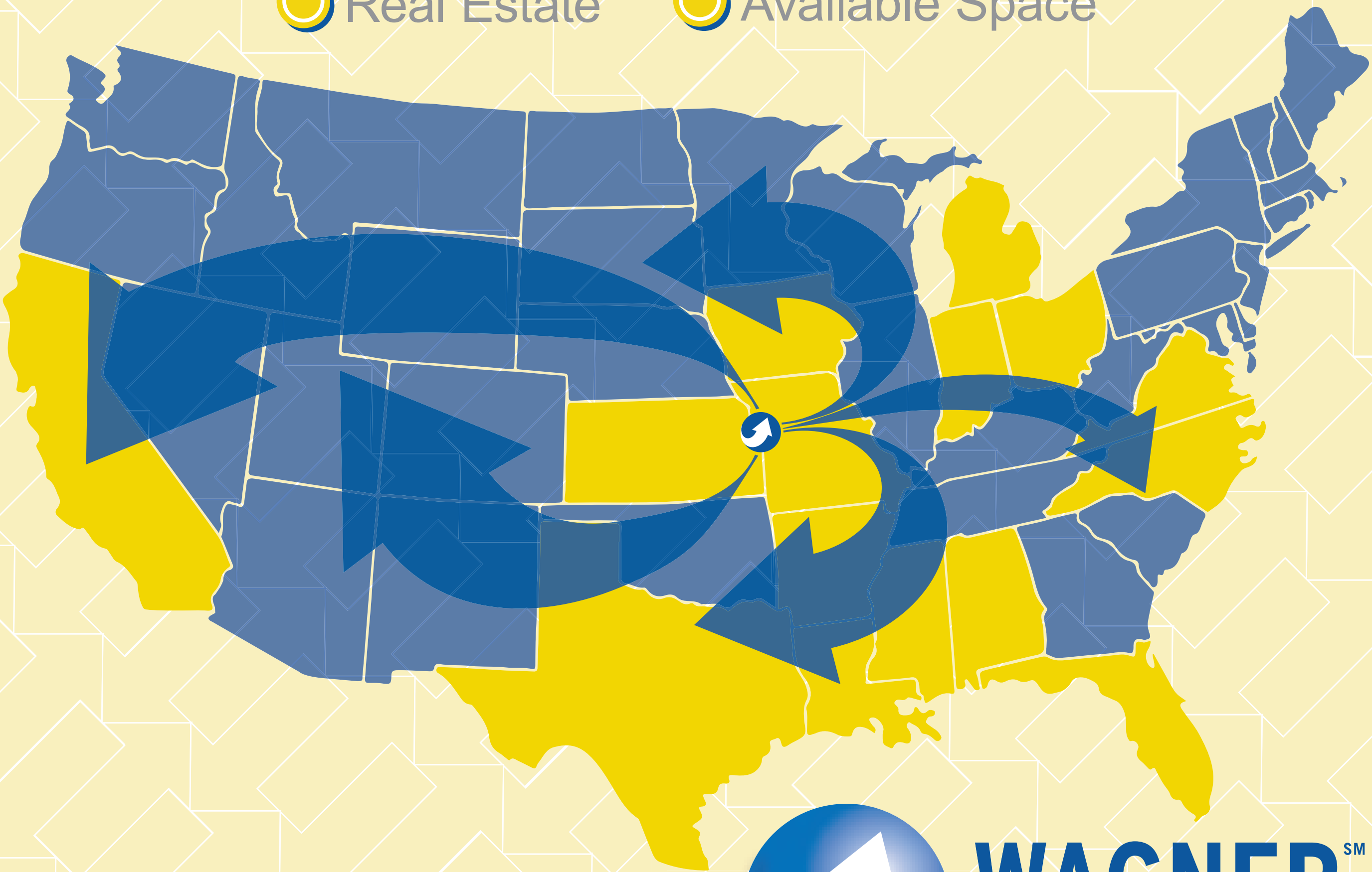
Next-gen analytics and artificial intelligence (AI) provide real-time, accurate information and insights that enable enterprises to rapidly adapt to shifts in the business landscape. AI-based technology helps supply chain professionals to strategize by providing insights and recommendations based on the study of market trends and automated forecasts.

So how do we manage our supply chain during these turbulent times? Consider these metaphors that describe how managers navigate change.

The "calm waters" metaphor is a description of traditional practices and theories that likens the organization to a large ship making a predictable trip across a calm sea and experiencing an occasional storm.

The "white-water rapids" metaphor describes the organization as a small raft navigating a raging river.

We are currently in a "white-water rapids" phase in terms of today's global economy, at least for the foreseeable future. So it's best to strap on your safety belt and find ways to ride out these rapids. ■



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Using FTZs to Treat Pharma Challenges

Every day, pharmaceutical manufacturers navigate complicated regulations while managing costs and reducing risk. Foreign trade zones (FTZs) can help, but only if manufacturers understand what they are, their potential benefits, and how to best use them.

FTZs—areas in or next to U.S. ports of entry under the control of Customs and Border Protection (CBP) but considered outside CBP territory—are designed to remove certain disincentives associated with manufacturing in the United States. But they can also offer advantages to international manufacturers before their products enter U.S. commerce.

Formal CBP entry procedures and duty payments are only required once a product enters CBP territory for domestic consumption. FTZs allow products to move in or out of these designated areas for storage, assembly, manufacturing, and processing, without actually entering U.S. commerce, although they are on U.S. soil. In pharma, this practice has many benefits, such as allowing drug makers to defer duties and manage costs until their products enter U.S. commerce.

Pharma manufacturers with any imported products, whether raw materials, active pharmaceutical ingredients, or finished drug products, should evaluate the benefits of FTZs and consider a strategy that effectively leverages them.

Additional Benefits

FTZs can also minimize risk and expedite a pharma manufacturer's entry into the United States, pending FDA approval. The U.S. FDA approval process often takes one year or more to complete. FTZs allow manufacturers to store treatments for inventory, warehousing, re-labeling, repackaging, and exporting to other countries in the meantime. Once approved, treatments can be immediately released from the FTZ, increasing delivery speed and enhancing patient access.

Once a product has launched and requires reoccurring U.S. shipments, CBP has implemented the weekly entry filing (WEF) program, which allows customs brokers to submit an estimate of the product that will be withdrawn from the FTZ and offered for consumption into the United States during the subsequent seven days. This program is designed for repetitive, high-volume entries of low-risk products, including some FDA-regulated drugs.

After the FDA approves the process, products would no longer require additional sampling or examination. These programs enable manufacturers to get their therapies quickly and efficiently to the patients who need them.

How a 3PL Can Help

FTZs offer tangible benefits but they require a thoughtful approach and resources to manage. As a result, some manufacturers work with a third-party logistics (3PL) partner that operates an FTZ and can help leverage an FTZ strategy and assist with storage, receiving, and fulfilling orders.

Using an FTZ and 3PL can defer costs, speed delivery, and increase efficiencies. But the most important benefit, in pharma, is to get treatments to patients faster. ■

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INBOUND LOGISTICS TOP 100 3PL PROVIDER 2018 2017 2016

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Maximizing Global E-Commerce Profits

With 7 billion prospective customers out there, how can e-commerce companies not grow wealthy by expanding internationally? But, as with most things in business, international e-commerce is not as simple as it sounds. It takes work, planning, and investment, but the profit potential is very real.

When branching out internationally, you'll be able to get a good start if you keep the following three steps in mind.

1. Enable. Be sure your site feels like a domestic site in every market. Here's how:

■ Supply content in the shopper's native language. If possible, work with a provider to get away from machine translation and into human translation to capture the "voice" of the consumer.

■ Check the currency used on the product. Currency may be the most important thing to translate.

■ Enable the right payment methods. Nothing stops a transaction faster than an inability to pay. Determine the most common credit cards in the shopper's market.

■ Balance the speed and cost of deliveries. Offer an option that will deliver products within one week of the order along with an expedited option. The desire to "have it now" is present overseas.

■ Protect yourself and your customers from fraud. Fraud rates are higher internationally.

2. Optimize your site and your logistics.

■ Work with your transportation provider to reach customers more quickly and affordably in each market. Conform to local shopper expectations for delivery time and trackability.

■ Run simple promotions. For example, offer free shipping at certain order size thresholds. Customers around the world demand these seemingly small perks.

■ Immerse yourself in the lifestyle of your new customers. Be sure your marketing is ready for the culture. Know all the local holidays and offer appropriate specials.

3. Invest. Local marketing is the key to real success, and good marketing requires investing.

■ Create a local social media presence. Younger shoppers in particular do many of their product evaluations on social media.

■ Find and enable local influencers to help with your social media marketing.

■ Be sure you're on the right marketplaces. In many countries, shoppers use marketplaces much more than retailers' websites. Don't miss an opportunity to have eyes on your products.

One more important point: List the actual total cost for international customers for each product on your site. Tariffs and duties can be expensive, and many customers will refuse delivery if they find added costs at their doorsteps. Give complete information up front.

International e-commerce can be complex, but for small or mid-sized companies, partnering with a company that already has the expertise can help you get started more quickly and safely.

There really is a world of customers waiting for you. Find the right partners to be sure you're ready and get to work. ■

IT MATTERS

BY MOHAMMED (MO) HAJIBASHI
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Today's Technology, Tomorrow's Demand

The late actress Carrie Fisher said, "instant gratification takes too long." Her prescience is spot-on. Consumers don't just want convenient, personalized products and services—they want them immediately. Speed and flexibility are the most significant aspects of meeting this heightened sense of "must have it now."

Consumer packaged goods (CPG) companies are in a fierce race to stay relevant and far ahead of the competition. This dynamic is leading CPGs to invest in new technology to help predict—and in some cases, even create—market trends.

At the same time, companies are looking to rapidly develop products and services to satisfy consumers' growing needs. In many cases, today's advanced technology allows companies to offer goods that exceed expectations of convenience, responsiveness, and personalization.

Here are the pillars comprising today's consumer construct:

Convenience. Amazon's two-day (sometimes two-hour) delivery model raised expectations to challenging levels and established a new consumer service expectation. In response, businesses are seeking the technology and infrastructure to address slow response times and wasteful fulfillment models.

Accenture research confirms this tendency, revealing that 64 percent of CPG executives are searching for technological methods to eliminate wasteful distribution models. They are looking for new capabilities to improve existing fulfillment operations and enable new direct-to-consumer channels.

Responsiveness. Today, brand loyalty is all but non existent. To stay relevant, forward-looking CPGs are rethinking their operating models to not only stay abreast of trends, but even create new ones.

By investing in new technology, CPGs can reshape traditional linear value chains and functional silos, which historically hinder communication and decision-making across the entire operational network.

Our research shows that 68 percent of CPG executives invest in this technology to better identify and shape demand, combining consumer insight with external demand signals and artificial intelligence.

Personalization. Consumer desire for personalized products and services is on the rise. Customized subscriptions and curated gift boxes demonstrate this growing trend. IT can help companies develop smart, agile and service-oriented supply chains—completely digitized—to meet these consumer wants.

Digitization allows companies to handle the individual requests of even millions of consumers. This is the way forward. More than 70 percent of CPG executives say they invest in technology to capture and integrate consumer insights aimed toward improved product and personalization development.

Adopting the right vision, enabled through technology, can help companies rise above consumer expectations of convenience, responsiveness, and personalization. ■

Adaptive Solutions from The Shippers Group

We rely on our heritage of integrity and hard work as a family-owned company to make The Shippers Group an even more proficient supply chain partner. Supported by operations focused on continuous improvement, our quest to provide the ultimate supply chain experience begins by offering services to meet our customers´ needs.

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With over 100 years of experience in warehousing, our clients can count on The Shippers Group for reliability, efficiency and productivity. With dedicated or multi-client facilities, we are ideal for scaling to meet the needs of large manufacturers and distribution support for food, consumer goods, healthcare and automotive consumers.

CONTRACT PACKAGING

The Shippers Group enables CPG companies to have a total outsourced model for contract packaging services. From custom packaging to kitting, The Shippers Group performs automated packaging or hand construction for point-of-sale displays, kits for e-commerce or retail, and value added services such as labeling, inspection, light assembly, samples distribution and more.

ECOMMERCE FULFILLMENT

As commerce has moved online, so has The Shippers Group advanced technological capabilities that interface with shopping carts and maximize order processing efficiency. We work hard to ensure the right goods reach the right customer at the right time. As e-commerce businesses grow, this approach allows for scaling up when needed.

TRANSPORTATION

Nationally or regionally, The Shippers Group offers Truckload and LTL transportation services to our customers. Some customers prefer to manage their own transportation functions, but for those customers who are looking for one source to handle all of their warehousing and transportation needs, we provide services that also include drayage, cross-dock and transload.

VIEWPOINT

BY JOHN McDONALD
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Driver Shortage or Lack of Innovation?

The trucking industry has faced a driver shortage for many years now. In a world where every industry seems to be evolving, the stagnant nature of trucking is hurting the employment pool.

While trucking was a popular profession for two previous generations, millennials have drastically different career expectations. Almost all millennials were raised using technology and connected devices to be more organized and productive. They want to work for a company that understands how they work.

Rather than selling millennials on the current state of trucking careers, it's time to sell transportation on wholesale changes that increase operational efficiency and financial return. Here are a few ways to make the industry more efficient and technology friendly.

Preventive maintenance with IoT sensors. Trucks can be finicky, throwing error messages or fault codes that drivers and fleet operators often don't understand. Using sensors that collect live data from engine performance and give fleet operators insights into the problem and the solution can prevent driver downtime and save precious hours of pay drivers lose waiting for repairs.

Sensors can also help mitigate transportation issues as a result of weather, and monitor sensitive cargo. Understanding the path a shipment takes can help drivers feel confident about unforeseen situations that could delay or change their daily schedule, and therefore their compensation.

Warehouse automation. While autonomous vehicles have become all the rage in logistics conversations, driving is still a cognitive career that machines haven't mastered. However, sorting goods in a warehouse with more efficiency and accuracy than humans is something that is automation-friendly. Logistics companies with large regional fleets could move warehouse workers to the road, and automate some of the tasks that those workers were doing in warehouses in order to address driver shortages.

Inventory management control can also be automated. Barcode scanners, labeling automation, and object recognition not only prevent errors but also reclaim valuable working hours.

Electronic safety records. Electronic logging for truck safety checks and repairs can be incredibly helpful. If stopped by a Driver and Vehicle Standards Agency official, having electronic logs of vehicle safety inspections reduces the administrative burden on truck drivers and increases their time spent on the road.

Combined with IoT sensors that can merge real-time performance data with historical maintenance records, electronic logs can also help fleet managers train drivers to be better prepared to anticipate and handle truck performance issues. Positioning and implementing automated logs as a benefit versus an electronic babysitter are keys to recruiting younger drivers who already use technology to be more efficient in their day-to-day lives.

As the industry looks to recruit drivers in years to come, understanding how the newest generation uses technology and innovating legacy systems will be key to success. ■


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TRADE COMPLIANCE STRATEGIST

BY JACK TARKOFF

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The Cure for Meeting Pharma Requirements

Complying with global pharmaceutical serialization and traceability regulations without collaboration and system interoperability represents a significant challenge for pharmaceutical trading partners.

Collaboration preempts disagreements among supply chain trading partners simply because complete, accurate data is important to both parties. Contract manufacturing organizations (CMOs) are a crucial component of the pharma manufacturing ecosystem, and many pharmaceutical companies depend on them.

Pharmaceuticals companies need to collaborate closely with their CMO partners on serialization to avoid compliance-related supply chain disruptions. At the same time, CMOs need to collaborate with the rest of their trading partners to prevent shipping and distribution issues.

Interoperability is crucial for installation, integration, and support for any company producing licensed products to achieve seamless compliance with the new serialization requirements.

The most challenging aspects of serialization projects are financial, technical, and operational. Collaboration from a financial perspective means understanding who will pay for the integrations. Talk to your partners about alternatives and choose a win-win option.

From a technical perspective, CMOs and customers must set up standards and agree on responsibilities for serial number standards, packaging, and label design. It's also important to ask whether parties have the right resources, equipment, and IT infrastructure.

On the operational side, companies underestimate how time-consuming serialization is. It's not only the initial integration but also maintaining the system as your companies grow. CMOs, CPOs, and other vendors should discuss this from the very beginning.

Benefits of Collaboration

Aligning and collaborating within an established framework and processes ensures that the solution works seamlessly across organizational boundaries. Additionally, it is easier to validate systems and focus on data quality. And normalizing or correcting data has to be done before it is pushed further to other systems to avoid damage.

Collaboration among pharmaceutical manufacturers, CMOs, and trading partners will also boost serialization capabilities for better forecasts and decision-making. The detail in data that serialization brings can decrease the loss in product returns in situations when customers buy a product at a discount, and return it at full price. Companies can track the purchase price at unit level to avoid these situations.

The good news: Many solution providers offer integration-as-a-service as part of their software product; they have the ability and expert IT personnel to integrate systems and deliver ongoing technical support. Offering an integration service in addition to the solution keeps costs low by defining a framework, processes, and costs upfront.

Collaboration and system interoperability can help the pharmaceutical industry streamline the serialization process in the supply chain. ■

SMART MOVES

BY CHAD STORLIE

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Six Ways to Develop Character in Leaders

One of my hardest days in the military came in Baghdad during Operation Iraqi Freedom in 2003. I was leading a Special Operations Planning Team and we were using an event tracking system to predict where, what type, and when acts of violence would occur. We predicted a huge rise in attacks with little end in sight.

We were asked to present our predictions to the commanding officer of all U.S. and coalition military forces in Iraq. The general launched into a tirade on how our results were incorrect, our conclusions ignorant, and the predicted number of future attacks impossible. We maintained that our analysis was correct, but the general dismissed us with a wave.

Our Special Forces Commander said that our "incredible character" made him proud to lead us. That awful day in Baghdad found us more correct than we ever wanted. It also convinced me that character is the ultimate attribute for leaders to exercise, employ, and improve so they can successfully solve problems.

1. Character is developed by working and owning the hardest problems. Leaders with character focus on solving the hardest problems, not the easiest ones, and must fully own these resolutions. Most leaders with character "inherited" their hardest challenges but, instead of blaming, resolved the problem.

2. Character looks deeply into what an organization needs to do to be successful. Character always looks to what can be improved, changed, and innovated to make an organization better for employees, customers, and the organization's leaders.

3. Character is unflinchingly open, honest, and fact-based. The discussion of enemy attack numbers in that Baghdad conference room relied on honesty; facts based on multiple and reliable sources; and a commitment to openly share results, methods, assumptions, and facts so everyone possessed the same information and understanding. Nothing good ever occurs in the dark, undiscussed and unrecognized.

4. Character values people as the most important asset of an organization. In Iraq, I concluded every mission proposal with the "Special Operation Forces Truths." One is: "Humans are more important than hardware." Character recognizes that all ideas, results, innovations, and successes ultimately come from people who are challenged, led, educated, respected, and appreciated. When you lose or drive away great people, success is rarely possible.

5. Character is quiet so others can speak their opinion and leaders can learn. Leaders who deal with the daily challenges of innovation, customers, competition, employee development, education, revenue, and profitability hold their voice so that others can speak, share, and describe the problems that they see and experience.

6. Character is never done, never static, and always improving. Building character is an ongoing exercise, not a one-and-done task. Leaders with character constantly seek new problems and challenges. They also seek to develop new leaders to help find, improve, and ultimately resolve problems. ■


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BY MARYANN HOLDER
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Fighting Counterfeit Products

As pharmaceutical and food supply chains become more global, the risk of fraud, substitution, and counterfeiting increases. Consumers are demanding more transparency and safety adherence as these issues arise.

Consumers are also increasingly concerned about the source of their products and the conditions under which they are manufactured.

In the pharma supply chain, patients are especially vulnerable to counterfeit and substandard drugs, which can cause illness or death. Recent food contaminations have prompted consumers to pay closer attention to where their food is sourced.

In today's supply chains, end-to-end serialization and authentication don't necessarily present an all-or-nothing proposition. Authentication, in particular, can take many forms, but here are two techniques:

- **Digital imaging** validates food products and ingredients. Invisible markers placed directly on product packaging can be scanned to detect authentication markers to ensure no substitutions enter the supply chain.
- **Serialization** involves marking components, e.g. by barcode, so they can be individually identified and tracked, and allows supply chain collaboration.

When used together, these two technologies help secure products by standardizing information flow and safeguarding authenticity.

From Linear to Digital Data

To gain visibility, many manufacturers are applying new technology approaches to turn linear supply chains into intelligent and nimble digital supply networks. Similar in concept to social networks like Facebook, these business networks are creating breakthrough results, because all parties on a single platform can easily share data.

Pharmaceuticals may pass through many countries and borders throughout the manufacturing process, creating endless opportunities for tampering or insertion of counterfeits. In response to these growing concerns, many countries have implemented laws to regulate medical product safety and distribution.

Similarly, in the food industry, consumers demand more information about the provenance of their food and how it was produced so they can check its journey from farm to fork.

Acting promptly in the event of a recall is critical to both consumer safety and company brand management. Network platforms help in this situation because they enable data to be shared among all participants (on a blockchain if necessary) for visibility across the supply chain.

Problems can be quickly identified and isolated from the supply chain, and partners and regulatory agencies can be alerted immediately, meaning a quicker response and less potential fallout. Blockchain also allows those partners to coordinate logistics more efficiently, and to improve service, while reducing waste and costs.

When it comes to consumer safety, traceability is key. Food and pharma manufacturers can no longer afford to neglect the importance of traceability or applying new technology approaches. ■

REVERSE LOGISTICS

by Andrea McFarling
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Minimize Returns While Improving Sales

The popularity of free shipping has led to a growth of online sales. It has also created a problem: a large number of online returns. The shipping world defines the returns process as reverse logistics. Minimizing costs and even making a profit in reverse logistics is critical to an e-commerce company's health. Here are some ways to do that.

Prevent returns. The best way to handle returns is to not get any. While this may be wishful thinking, there are ways you can minimize the number of returns you receive.

First, consider these top reasons for online returns:

- Product didn't match description
- Received wrong item
- Product was damaged

You can fix or lessen the first issue by providing detailed product information and in-depth content. Consider incorporating high-resolution photos, videos, and interactive visualization tools, such as augmented reality (AR), into your product descriptions. These options help consumers see items in finer detail.

Include product reviews on your site. Glowing product reviews motivate buyers. Customer reviews also offer important consumer-minded details, such as an item's fit or durability. This information helps buyers make more informed purchases, preventing returns. The reviews can also help shoppers avoid a purchase that they could be unhappy with, which can increase returns.

Prevent sending customers damaged or wrong items. Continued or additional employee training always helps. Using a shipping software that automatically downloads marketplace orders limits human error.

Craft a smart return policy. Online consumers are concerned about returns. A visible return policy and offering free returns is optimal for customers. Implementing this for your online selling efforts can greatly increase sales.

Get sales from returns. Here's a powerful statistic: In a recent survey, 92 percent of consumer respondents said that they will buy again if the online product return process is easy. What retailer wouldn't want that kind of retention rate?

What makes a return process "easy" to a customer? In addition to making the return policy simple to find on the site, automating the process is key. Offer customers a way to process returns from your website that allows them to generate a return shipping label. Provide tracking options and automated email notifications so customers can feel informed about the status of their return.

But don't stop there. Returns create an opportunity for merchants to sell more products. During the returns process, use emails to offer discounts or suggested products to encourage shoppers to buy additional items.

Make it Work for You

By preventing returns, creating a smart return policy, and generating sales from returns, e-commerce companies can minimize and improve returns while also increasing sales. ■

BY JEFF LAU
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Is Your Supply Chain Ready for 2019?

Some of the most relevant topics in today's headlines—technology, commerce, international relations, the legal landscape, and even immigration policy—will impact supply chains over the next 12 months and beyond.

The key for supply chain and logistics professionals is to contextualize these issues and think strategically about how they will play out. Here are a few key trends and topics that you can expect to hear and see more of in 2019.

Capacity and pricing. While much-discussed driver shortages and consolidation between transportation providers have impacted capacity and pricing, these pressures will ease somewhat in 2019. Rising freight costs are likely to plateau, providing an opportunity to refine pricing.

Logistics professionals are also getting better at addressing capacity constraints. The best are not treating carriers like a commodity; they are working with them. That means moving away from one-off tenders and toward developing more holistic, sophisticated, and sustainable solutions that include data sharing.

There is capacity out there for those who know what they are doing and how to tap into it.

Legislative developments. Legislation is the true wild card for 2019. Small regulatory changes can have a tremendous cascading effect on supply chains.

New driver regulations/limitations, reductions in personal liability, or rule changes impacting foreign drivers all have significant downstream implications for the logistics sector. One year ago, changes in the area of liability or foreign permissions seemed inevitable. The forecasted slowdown in the economy, however, will likely create more capacity, alleviating some of the pressure.

Blockchain technology. The backbone of cryptocurrency has much wider use potential beyond its crypto origins. Blockchain can be used to track transactions with great specificity and without being manipulated.

A great deal of fascinating research and development is happening regarding applications for strengthening and streamlining supply chains. It wouldn't be a surprise to see some innovative new blockchain-based applications unveiled in 2019.

Autonomous vehicles. While we can expect to see more autonomous vehicles on the road in 2019, the rollout will continue to lag well behind the media hype. We will likely see activity in line-haul and highway driving applications, not in pickup and delivery.

The long-term promise of autonomous vehicles is exciting, and should create flexibility and unlock new efficiencies. But the near-term impact is still likely to be minimal—partly because of the expected slowdown and a corresponding easing of demand.

The bottom line? 2019 will feature many of the storylines that emerged in 2018 playing a more prominent role. Perhaps the biggest story will be an anticipated softening in the markets. One thing is certain: Supply chain professionals will need to be flexible and able to respond with both speed and sophistication to whatever comes next. ■

[3PL LINE]

BY ANDREW BERKE (*PICTURED*) AND CHARLES BOESCH

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Using Technology to Cut Freight Costs

The bad news: Tight capacity and higher freight rates are the new normal. The good news: There are ways to handle the impacts far better than your competition.

Aside from securing reduced freight rates from your carriers, here's how you can cut freight expense while improving service:

- Coordinate business intelligence
- Improve load planning
- Provide carriers more notice of scheduled shipments
- Explore shipping priority
- Evaluate alternative warehousing options
- Improve invoice processing
- Automate dispatch
- Consolidate carriers
- Consolidate loads to ship more weight less frequently
- Engage a full-service third-party logistics provider that offers low- or no-cost options to review your supply chain

Look at Other Areas

In the sweat and worry about costs, some companies overlook the overall business plan. Review how you are doing business with your largest customers. For example:

- Ask your team if the proximity of customers to your ship locations has changed over the past year.
- How has your product mix changed? Are carriers still well suited for each product line?
- How has your customer and supplier footprint changed?
- Can IT/connectivity opportunities with your customers/suppliers bring efficiencies?
- Are all commitments to customers and suppliers still relevant and critical?
- Are inventory replenishment and stocking strategies built to optimize current customer order flow?
- Do you incent customers to build orders to reduce transportation costs?
- Are pricing strategies driving customer behaviors that create supply chain inefficiencies?
- What are the trends in landed cost-per-unit over time? How can this trend be positively impacted?
- Do different business units have different freight characteristics or requirements? If so, are there ways to minimize the number of carriers moving the less attractive freight, improving the operating costs of carriers hauling your better freight?

Answering these questions gives you great data that is the key starting point to pivot in a constrained capacity economy. These analytics help you understand what you can and cannot change across pricing, billing, purchasing, packaging, and sales.

Nearly all shippers' businesses look different today in terms of customer footprint, density, and average shipment size and weight, yet they haven't reviewed supply chain data and optimization approaches in ages. It might be time for a fresh look.

Many good transportation management systems have access to the key data and can offer an initial analysis. Alternatively, third-party firms can offer solid technology at little or no additional cost to the transportation spend. Either way, it's prime time to examine every internal process that could impact order size, order frequency, inventory management, and transportation decisions. ■

THOUGHT LEADERS

The Digital Revolution Is Here

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As the supply chain industry begins to embrace new technologies, there are still many organizations not yet leveraging the solutions available to them. To stay competitive, technology will become essential.

Q: ***How do you think the digital revolution will affect the supply chain industry?***

A: The supply chain industry is about to receive a wakeup call. No other trillion-dollar industry in the world is as technologically outdated. In 2019 though, all that will change. A digital transformation is quickly and quietly sweeping the industry, and the early adopters will be poised to compete for decades to come.

Q: ***Do companies need visibility and access to their transportation data?***

A: Yes! With new technologies, data can be captured digitally, centralized, and then efficiently turned into action items. We're not talking about filing cabinets here. For example, can you view all modes from anywhere with an internet connection? If the answer is 'No,' or worse, 'I don't know,' this should be your call to arms.

There are a few technology platforms in the marketplace with flexible architecture that can work with disparate carrier systems and even upgrade outdated carrier platforms into modern digital data oases.

Q: ***Are Excel spreadsheets still effective?***

A: Excel is a great tool, but the tool chest has grown extensively in recent years. Now automation is king, through open source technologies, API connections and multi-modal platforms. This can ease the burden of everything from order entry to exception reports, from freight quotes to GL coding. Your time is valuable, but without the right technology tools, you likely aren't making the most of it.

Q: ***How does technology help the front end?***

A: Modern automation technologies aren't just for post hoc analyses anymore. You should be able to quickly and easily identify inefficiencies in your order, transportation, or fixed operating costs. Warehouse metrics displaying full-time and temporary labor, supplies, rent, and more can be automated in easy-to-use dashboards, allowing shippers to combine the different metrics to clearly see exactly where profits are leaking out of their supply chain. Additionally, shippers can utilize technology to model rate results from multiple carriers, which levels the playing field during carrier negotiations. Multiple companies are bringing this new technology to bear, procuring massive savings for their clients.

Finding the right technology partner in today's marketplace is easy, and oftentimes it can be done with no upfront cost. The digital revolution is happening, and there's no going back. In 2019, the gap between companies utilizing these new tools and those that are not will grow exponentially. The choice is yours as to which side of the revolution you're on. Choose wisely.


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Supply Chain Challenge?
SOLVED!

Helping Del Monte Optimize its Transportation Network

By partnering with Transplace's Business Intelligence team, food products maker Del Monte was able to gain access to its entire data set, create automated reports around key metrics, and reduce overall transportation spend.

THE CHALLENGE

As one of the country's largest producers, distributors and marketers of premium-quality, branded food products, Del Monte has a large number of shipments moving throughout its supply chain, resulting in a tremendous amount of data. Unfortunately, the company's reporting procedures mostly involved manually updating spreadsheets—a time-consuming process where it could take weeks to produce a desired report. Del Monte recognized the need to automate its reporting process in order to make faster, data-driven business decisions and reduce transportation costs.

THE SOLUTION

Having already successfully partnered with Transplace to manage its North American transportation operations for more than a decade, Del Monte leaned on the logistics company to help automate its reporting process and improve its business intelligence. By partnering with Transplace's Business Intelligence team, Del Monte was able to gain access to its entire data set and create a new suite of automated reports. The company can now quickly and easily create scheduled or ad hoc reports and dashboards around key metrics, including on-time performance, tender acceptance, transportation spend versus budget, and more.

Del Monte's supply chain group can now access and share critical data—both around internal operations and market trends—improving decision-making and communication with company leadership about market conditions and rising freight costs. By improving its business intelligence and more quickly addressing supply chain issues, Del Monte has been able to optimize its network and reduce overall transportation spend.

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Supply Chain Challenge?
SOLVED!

Getting Crafty with Supply Chain Solutions

Verst Logistics helped an arts and crafts supplies company address peak season challenges and growing sales by expanding its supply chain capabilities.

THE CHALLENGE

A high-growth arts and crafts supplies company decided it had to pursue a new path to improve its limited supply chain capabilities. Sales growth during the 4th quarter peak period had created challenges in getting orders processed accurately and on-time. While growing sales is a very good thing, the problems that resulted were significant, impacting customer satisfaction and lowering fill rates. Additionally, forecasting in a high-growth business was difficult, and staffing for a peak season that lasts only a few days was nearly impossible. Shipping out of a single distribution point in California to reach East Coast customers added to the problems. As peak hit, the management team had to work side-by-side with their 3PL's employees picking, packing and shipping orders to keep up with volumes.

THE SOLUTION

The company began its search for a partner to execute its supply chain and improve customer satisfaction. The search led the company to Verst. Verst created a plan to utilize its 396,000-sq-ft fulfillment facility located in a key Midwest logistics corridor. Additionally, Verst partnered with Locus Robotics, a leader in state-of-the-art robotic technologies, to address peak season challenges by incorporating computer-guided bots for picking and packing speed and accuracy.

Now Verst fills orders for all geography east of the Mississippi, including a portion of product volume shipping direct to retailers, while following strict order compliance. The Verst solution handles over 99% of all orders on time. At the height of the holiday peak, over 100,000 units were picked and packed in one 24-hour period, with 90,000 units being confirmed and shipped out the same day.

The arts and crafts company now has a solution for reaching its direct and indirect customers that can grow with its business and operate smoothly throughout the entire year.

Verst LOGISTICS

To learn more about Verst solutions, call 800-978-9307 or visit verstlogistics.com.

Supply Chain Challenge?
SOLVED!

Consumer Electronics FTZ

MD Logistics became a general-purpose zone operator, providing customers with significant cost savings and allowing their goods to flow to market with greater ease.

THE CHALLENGE

MD Logistics has partnered with a leading global supplier of mobile and consumer electronics products since 2007, when a newly acquired product line prompted the company to seek third-party logistics (3PL) services.

A majority of their products originate overseas and therefore require numerous customs filings as well as costly annual duty and brokerage fees. When exported goods require drawbacks, the cumbersome process could take up to nine months.

MD Logistics, along with their customer, realized that a Foreign Trade Zone (FTZ) would streamline the thousands of cartons of product that MD Logistics handles every month. An FTZ allows goods to be imported and warehoused duty-free until they are consumed or re-exported, and also allows for duty-free transferring to other FTZs in the United States, Canada and Mexico. By expanding its FTZ distribution network to the Midwest, their customer could realize a significant cost savings and increase the ease by which their goods flow to market.

THE SOLUTION

MD Logistics embraced the chance to provide enhanced services to their customers and immediately reached out to the local FTZ Authority.

Becoming an FTZ grantee would be a complex process, requiring start-up and operating costs as well as regulatory and administrative requirements. MD Logistics retained a well-respected expert to ensure the project was accurately completed under a strict timeline.

MD Logistics navigated the application process to become a general-purpose zone operator. Formal applications had to be submitted in Washington, D.C., bonds needed to be put in place and site inspections by U.S. Customs and Border Protection had to be passed.

Everything went according to plan. Upon approval, MD Logistics entered into a contract with the Indianapolis Airport Authority as an FTZ grantee.

MD Logistics also incorporated an FTZ systems integration project. The company procured the most effective FTZ-compliant software available, deployed it within the existing warehouse management systems and completed full integration into customers' software systems.

This ensured that all data required for FTZ compliance was transferable and able to be reported in a timely manner to U.S. Customs and Border Protection.

MD LOGISTICS

To learn more about MD Logistics' solutions, email info@mdlogistics.com, call 317-838-8900, or visit www.mdlogistics.com.

Supply Chain Challenge?
SOLVED!

Finding Capacity and Savings In a Dynamic Market

Hub Group generated savings and efficiency for a leading national retailer.

THE CHALLENGE

A leading national retailer was dealing with an unexpectedly challenging capacity environment, influenced by rising costs and a looming peak season. Complicating the issue, a high frequency of multi-stops had caused productivity losses for underlying carriers. The retailer needed to ensure its supply chain sustained product flow to serve its customer base while maintaining a consistent driver pool. With drayage costs accelerating, there was a pressing need to optimize network practices and reduce costs. In the current environment however, this seemed like an exceptional challenge.

THE SOLUTION

Hub Group identified the factors escalating costs at a major junction. Leveraging their understanding of the retailer's supply chain, analysis revealed an opportunity for freight consolidation in southern California, strategically positioned between critical vendor pickups and their DC network.

A solution was devised that established a short haul LTL network in conjunction with cross-docking at key locations, and a long haul asset strategy that improved efficiency, supplied capacity, drove service enhancement and reduced costs. Ultimately, multi-stops were made more efficient, resulting in enhanced network performance.

Hub Group

To learn more about Hub Group's solutions, email info@hubgroup.com, call 800-377-5833, or visit www.hubgroup.com

159 EXPERT TIPS TO AMP YOUR SUPPLY CHAIN

The internet, cloud-based systems, mobile devices, and the Internet of Things have already improved logistics and supply chains. Use these tips to better manage your digital transformation.

1 Digital strategy begins with visibility expectations. Begin by defining what visibility means to you and your end users/customers/suppliers, what kind of experience you want them to have, and what you want to gain from increased visibility.

2 Pay more attention to digital feeding and cleaning. A digital strategy needs good models of both internal (customers) and external (suppliers) data flow. Decisions are only as good as the incoming data and the models that process that data. Set high standards on the data flowing through your systems. The #1 reason people lose trust in systems is a lack of confidence in the data.

3 Develop a collaborative ecosystem. Today's new digital environment requires a collaborative approach to managing your supply chain. Developing an extended ecosystem that brings the best of all your partners' capabilities into a shared, technology agnostic environment is vital. Assuming you can develop and own all these capabilities offers a false sense of security.

5 Don't lock your digital system into today's solution. Solving current pain points is tempting, but focus on the ability to flex up or down, quickly adjust, and accelerate the development of new capabilities. Look into Enterprise Integration Platform principles that allow companies to easily integrate, regardless of the various execution systems in play.

6 Implement a visibility-enabled IT application. Your IT team should deliver a cloud-based, user-friendly tool that pulls all the KPIs, production data, and timestamps out of your various sub-systems. Create a single metrics repository that provides visibility to every pallet or case move with real-time inventory positioning.

7 Data needs to have a long-term plan, but also requires experimentation. Data is not worth collecting without a clear plan. It's important to establish key performance indicators, implement specific goals, and identify what you need to accomplish. Sometimes the plan is a clear experiment to see what new capabilities the data can provide, but have a plan for evaluating its value and when to stop collecting data if it is not providing enough value.

8 Develop an Industrial Internet of Things (IIoT) strategy. Start implementing IIoT processes and technology—including

4 Share more data with partners to solidify relationships. *Be transparent with customers about their shipments by offering greater visibility regarding estimated delivery windows, location, and status. This allows you to reduce uncertainty, manage customer expectations, and find ways to improve the process together.*


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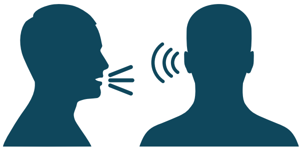
sensors on pallets, storage units, and assets—to track locations, positions, and conditions of products and resources. Identify critical processes and resources as the best candidates for pilot projects and learn how to scale up quickly to meet growing customer expectations.



9 Feed your instincts as a kind of data. Although digital strategy most often provides a flood of quantifiable data, make sure you include non-quantifiable information, such as what you may be hearing throughout the industry and your gut instincts with what you see in the data.

10 Blockchain is primarily about customer trust along the chain. Understand the players in the chain. The value of blockchain is proportional to participation across the industry, both horizontal and vertical. Using perishable foods as an example, each of the supplying farms, manufacturers, shippers, warehouses, and stores must be on board and willing to foot the updated workflow costs.

11 Use social network data to check on the chain. Check the reputation of vendors and potential supply chain partners by capturing customer experiences of other users across social networks. Tap into social media to get to know customers and partners more intimately and share successes. Building that relationship increases effectiveness and retention, and promotes cross-sell opportunities.

12 Blockchain's potential also lies in time saved. Goods can sit in port clearance anywhere from one to seven days. Blockchain can decrease this to hours, with a guaranteed clearance date. This reduces time to sell and enables more reliable just-in-time delivery and reductions of "just in case" inventory. Goods often get stuck in clearance due to incomplete or missing documentation. Blockchain creates a digital trail that can be fixed or recreated seamlessly at any point in transit.

13 Focus on flow of data to decision makers for real-time transparency. The frequency and size of data exchange is dramatically increasing at an accelerated rate. Being able to leverage this data in real time is imperative, but must focus on understanding what data is most critical to solving key business problems, what it means, who needs to know and have a shared understanding of it, and what to do when exceptions occur.

14 Plan how to feed your analysis tools with data. It is critical to automate the feeds from your warehouse, transportation, and order management systems into a data model and repository upon which future tools can be fed. The data warehouse should provide historical line-level information with the ability to analyze what-if scenarios.

Investments in transportation, warehouse, and yard management systems have a huge effect on your operations. Use these tips to help you find, select, install, and implement the "XMS" family of applications.

15 Minimize customization to the system's core functions. From the onset, do everything possible to minimize customizations, especially to the system's core areas. Fewer customizations means less time, cost, and risk upfront, plus better support and easier upgrades in the long run.

16 Apply scoring value to individual usability and mobility. Is the system easy to configure and personalize or does it require complex scripting or coding? Does it offer robust reporting, dashboards, intuitive user interfaces, and data visualizations? A first-rate WMS, TMS or YMS should also include mobile apps that allow management personnel to use it while on the move without having to access multiple pages or apps.

17 Plan for change, particularly peaks, growth, and expansion of products and services. Forecast your growth and volumes for the next several years and plan ahead. Make sure your systems can handle future sites, users, SKUs, channels, and order volumes.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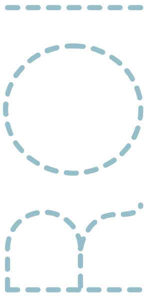
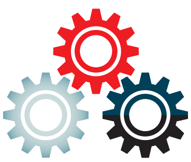


***18 Lead with a strong Return on Investment (ROI) analysis.** A solid ROI is key to getting your project approved. A YMS, for instance, will increase yard driver productivity, improve trailer utilization, and generally augment your site's throughput. Start by defining your operational costs in these key areas to estimate the potential returns.*

19 Know what you need and quantify what it means to your team. Document and refine your functional and technical requirements, plans, and integration needs. Before you meet with external parties, assign a team-agreed weight to each group or bundle on your list to start constructing a decision-making framework. Now you can cut through individual team member emotions or needs.

20 Look for pre-integration of significant value additions. Some WMS solutions offer functional capabilities such as labor management, supplier connectivity, and retail store management, which can help identify material benefits and ROI. Pre-integrated modules on a common platform can be implemented with less time and effort. From EDI to trailer tracking and beyond, look for a TMS that integrates with complementary tools and services that meet your unique business needs.



21 Ensure interfacing capabilities. Each system should have an open architecture and be able to interface with your enterprise resource planning system without incurring excessive customization costs. The WMS in particular must be able to integrate with TMS and YMS plus the Warehouse Control Systems (WCS) interfacing with materials handling equipment to improve warehouse efficiency.

22 Verify the technology roadmap and mobile capabilities. When evaluating potential vendors, examine their product roadmap, such as their mobile strategy. Does the vendor leverage common operating systems such as Android or iOS? Is the application a true web application or does it use terminal server technology? These factors will affect not only the longevity of your solution but also its usability.

23 Cloud or on-premise system is a big vendor filter. This decision could limit your vendor choices because many vendors sell their solutions as cloud only. With your IT department's current workload, what is the most effective role for them to play to maximize benefit to your enterprise?

24 Assemble a cross-functional team. Any management system selection, implementation, and support lifecycle affects many people. There are facility, change management and training, transportation, IT/technology, supplier, customer, customer support, e-commerce, multi-site, and labor impacts. Consider including third-party experts. During implementation, testing, and initial operations, the company's teams should continue working together to ensure a smooth process.

25 Be more customer-inclusive. Remember that these tools are also for your customers' value. Add system selection weight to tools that provide timely and accurate customer communication and access. Look for options with a secure, online portal where customers can view load status in real time.

26 Yard management might initially just need better appointment scheduling. Vehicle congestion often causes yard problems. Planning the optimal arrival of vehicles to maximize yard throughput can reduce the requirements of a full YMS—to the point of eliminating immediate need.

27 Don't forget the value of support. Support is critical. It is important to select an IT vendor that offers a clear plan for responsive customer service and enough resources to provide multiple levels of ongoing support (chat, remote monitoring and service, and onsite emergency capabilities).

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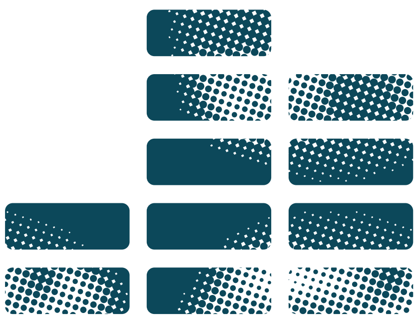
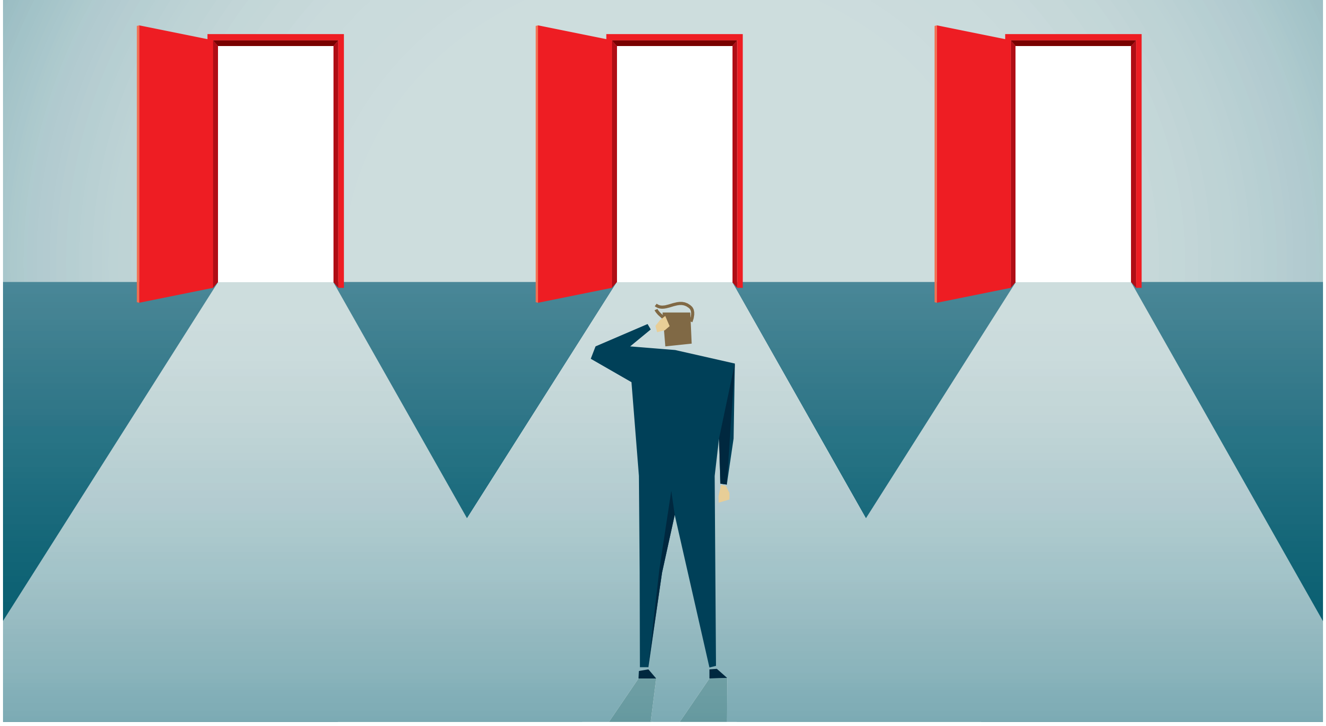


***Spec out a scalable and reconfigurable system.** Over time, business requirements change and the system must be able to flex with your shifting needs. Don't pay for more features than you currently need to run your business, but look for systems that offer a building block or modular approach, enabling you to scale and add functionalities when it makes sense. Ensure the system you choose is adaptable. Configuration, not modification, is the key to success.*

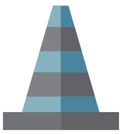
Warehousing



Take your warehouse or distribution center to the next level by using these practical ideas for layout, lift trucks, loading docks, peak seasons, and automation.

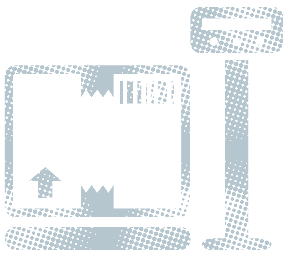
29 Make your warehouse more organized and visual. Clearly label all locations, aisles and areas. Keep storage areas clean and organized. Less time searching and more time picking orders and replenishing items make for a more productive and successful warehouse. In addition to labeling, store inventory on shelves with tilted trays or knuckled tracks to present products to pickers. Allowing them to see what they're picking eliminates errors.

30 Reduce travel time in the front lines of the warehouse. Bring goods to pickers and packers using conveyors or sortation units. Travel time takes away from picking orders so the fewer touches and less travel needed to complete an order the better. Also combine picking of orders into a single travel to a location to reduce the time it takes to fulfill each order.

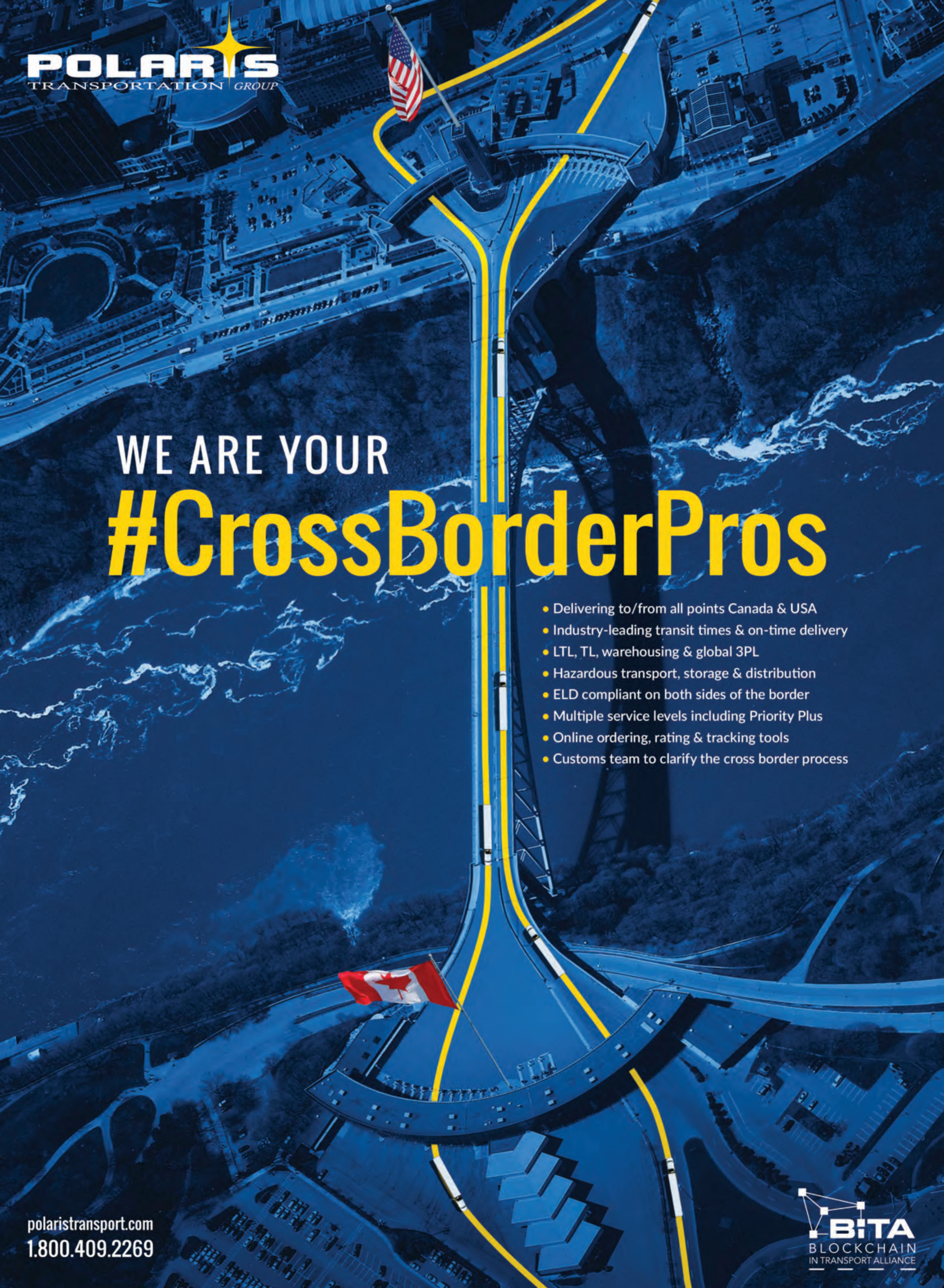


31 Have a plan for spills and a culture of action. Small spills or leaks can lead to major slips and disruptions. If something spills or leaks on your loading dock or trailers, get it cleaned and dried immediately—even if you have to interrupt activities. If you're unable to address the spill immediately, mark off the area and put up warning cones or signs.

32 Think out of the warehouse box by remembering safety in the yard. Pedestrians who work in your truck yard should wear high-visibility colors, avoid trucks' blind spots, and refrain from using cellphones or headphones while they're working outside. Other useful practices include yard cleaning only during daylight hours and working in two-person teams during busy periods.



33 Know weight and dimensions to slot SKUs intelligently. Get accurate information on SKU weights and sizes, plus order frequency and sizes to slot storage locations intelligently. Re-slot often to keep items in the optimal location.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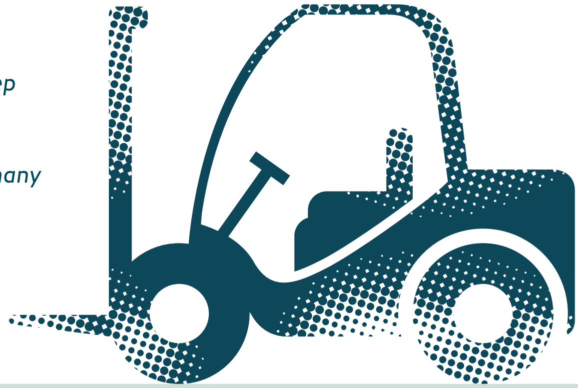
Separate pedestrian and forklift traffic. *Signs and painted lines help, but aren't enough. Physical barriers, both permanent and temporary, keep pedestrian and forklift traffic apart. OSHA estimates about 110,000 forklift accidents occur each year, many involving pedestrians.*



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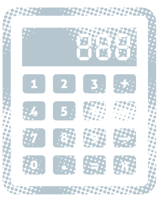
35 Make storage more flexible and reconfigurable. Product mix and volume changes are reality. Using modular racks that can scale to fit your warehouse configuration minimizes wasted space. Plus, if you use racks that can be easily adjusted to product mix changes, you can reconfigure them to use with different products, which saves money.

36 Create accurate maintenance timing and budgets. Good data on maintenance makes it easier to determine how much you spend per hour on repairs and routine maintenance. You can also forecast production peaks so you can schedule maintenance downtime around them. This will improve uptime and productivity.



37 Calculate true cost of equipment ownership. Find out how much it costs (per day, week, or month) to operate each piece of equipment. Make sure maintenance is included. You need to know how much you spend to identify savings and determine whether equipment has reached the end of its useful life.

38 Maintain an accurate spare parts inventory. Pay as much attention to your own inventory of spares as you do to the inventory you ship to customers. Data on equipment assets helps reduce downtime by having the right part available at the right time, and allows you to either stock what you use or be comfortable with the lead time of ordering a part.

39 Track exceptions, errors, and disruptions carefully. Use the past to be better prepared. Have established processes in place to document and track everyday events such as equipment failures, unscheduled shutdowns in conveyors or sortation equipment, interruptions in order flow, and reductions in service levels and throughput.

40 Regularly test your capacity limits. Surge testing simulates typical demand conditions during peak season. You should conduct the test four to six weeks prior to the season's start. Hold back up to half a normal day's throughput, and then send it all during a compressed three- to four-hour period to replicate peak volume and operating conditions.

41 Know your business and how it affects current and future order picking needs. Organize your warehouse by what works best for your business—either stocking materials by products that sell quicker than others, by groups of products most frequently sold together, or by seasonal items. As your product mix changes, plan your storage needs based on current and future order-picking needs, taking into account your projected growth.

42 Create an emergency offline response plan. *Identify key equipment within the facility that shuts you down if it goes offline. Your emergency response plan ensures you have the expertise, partners, and parts necessary to handle issues as quickly and intelligently as possible.*

43 Select order-picking technology first. Order-picking systems decisions are closely tied to location and storage mode decisions. Different order-picking technologies need to be selected that are best suited to SKU velocity profiles. Order-picking technology investments offer different ROIs, depending on the level of activity within a pick zone.

44 Ensure adequate space in order staging areas. Take an organized approach to creating space and flexibility for outbound processes. Allow for 50 feet of space from the dock to give employees enough room to stage for shipment and provide creative options for how to build shipments.

45 Better evaluate systems integrator compatibility and availability. Warehouse automation is an intense process that depends on a long-term relationship with the integrator you select. The integrator needs to collaborate with a range of internal and external colleagues, and engage and motivate all players. Are the candidate's temperament, communication style, and personality a good fit for your environment? Also make sure the systems integrator can commit the personnel and resources to meet your project's goals and schedules.

Many companies outsource all or part of their logistics operations to third-party logistics (3PL) providers. Use these tips to choose the best provider for your business, and leverage their expertise to your best advantage.

46 Treat 3PLs as business partners. Your 3PL is not just another vendor and should be in the loop regarding significant changes in logistics needs. 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.

47 Plan for new markets and capabilities. 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.

48 Research and discuss financial and capacity status. Gather and ask for clear, regular communications about financial status. Plan for major events like a 3PL partner shut down that could leave your operations at a standstill. Be wary of 3PLs that have a large concentration of business with a small number of customers. Make sure you know your 3PL's track record. Check references specifically relating to the services you're interested in contracting.

49 Set goals and KPIs, plus incentivize. Both your business and your 3PL partner should understand the established goals and key performance indicators (KPIs) you use to measure performance. Incentivize performance. It's important not only to establish realistic KPIs, but also to hold regular meetings with your 3PL, and offer rewards for performance.

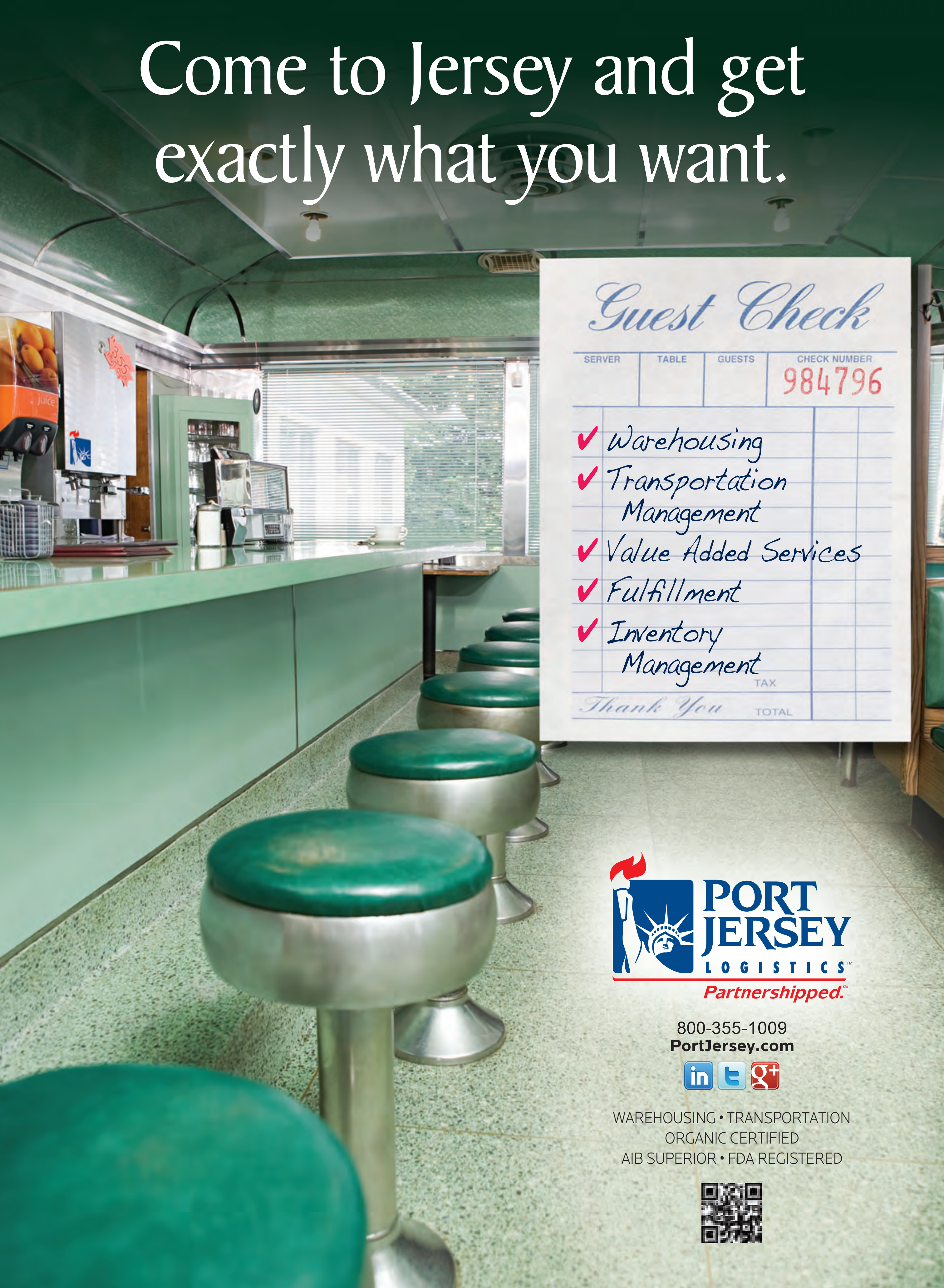
50 Determine customization and postponement capabilities. An experienced 3PL can help you leverage postponement strategies to optimize inventory and deliver excellent service. Building to order instead of to stock allows you to cut production and inventory carrying costs.

51 Place value on a continuous improvement plan. 3PL partners committed to service excellence and quality management pay careful attention to solution design and utilize proven processes to achieve desired results. They are constantly improving and planning service and performance upgrades.

52 Look for a 3PL that clearly understands the value of your brand. When you partner with a 3PL, you entrust them with your brand, so it is important to find a company with a long history of proven brand awareness. Look for a financially stable partner that continues to invest in facilities, systems, equipment, marketing, and human resources necessary for optimal logistics solutions.

53 Find a provider that offers omni-channel expertise. Omni-channel retail is now mainstream. Select a provider that understands the nuances of omni-channel commerce and how to deliver the optimal customer experience. Look for an experienced partner with proven performance, a repeatable business model, and experience with your industry or business type.

54 Pay close attention to the location network and plan. Choose a partner that maintains a network of locations. An effective 3PL takes a strategic approach to network configuration and helps you determine the right distribution center locations for efficient current and future business. The right partner has a network of conveniently located facilities—and the ability to open new locations to meet your specific needs.



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As shipments continue to travel around the world, use these tips to smooth the flow by selecting the right tools, learning how to manage cross-border shipments, and optimizing global transportation.

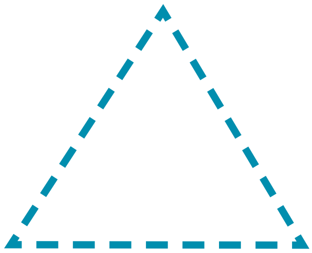
55 **The value of product classification accuracy is multiplied for global shipments.** Classifying products with the correct codes is an important requirement; it not only determines the duty paid on the product, but also can impact whether there are customs clearance delays because of inaccurate information associated with your shipment. By accurately classifying your shipments, you can clear them faster to avoid delays.

56 **Use correct valuation and markings.** Two important issues in reducing delays associated with clearing shipments are incorrect value declarations and insufficient/incorrect markings. Focus on both valuation and markings, especially when working with new products or suppliers. Making sure these are correct can help reduce shipping and clearance delays.

57 **Score vendors on paperwork accuracy.** Add paperwork accuracy as an element of your vendor scorecard, and make sure it has meaningful weight. A vendor that consistently causes shipping delays due to incorrect paperwork can be costly and may not be the best overall provider.

58 **Plan for growth in new markets.** It can feel daunting to receive orders from countries you've never shipped to before. Reach out to customs brokerage and transportation providers who can walk you through the shipping requirements. Not only will you be ready for the next order from that country, but it may also help grow revenue for your company.

59 **Know customs triggers.** Customs is increasing enforcement of regulations and if there are any inconsistencies, your shipment can be held up or your business penalized with substantial fines. Any address, purchase order number, quantity, weight, size, or other information discrepancies can delay shipments in customs.



60 **Implement triangulation to avoid shipping empty containers.** Triangulation means the same container and carrier is used for import and export—from point A to B, then immediately on from point B (or somewhere nearby) to its next destination. This also saves having to pay detention charges on a container not immediately returned to the yard.

61 **Use an automated bid management solution.** The ocean freight industry is in flux with a record number of mergers, acquisitions, and new alliances that impact service in key lanes and reduce carrier capacity. An automated solution can save time and provide the best rates. Check how bidders are vetted to be able to enter the system and provide bids.

62 **Expect customizing and configuring.** It is unlikely that you will find an off-the-shelf tool to meet all of your global trade needs. Make sure you can tailor the tool with flexibility to best meet you and your partners' business processes. Configuring and customizing the system to link partners will help optimize processes so your business runs seamlessly.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Sustainability

Eliminating waste is one of the best ways to support sustainability of supply chain resources. Use these tips to create the right corporate culture and a leaner, greener supply chain.

63 Look for opportunities to create a shorter, more responsive chain. Redesign your supply chain network to bring items closer to home when it makes economic sense from a total landed cost perspective. Globally source where assurance of supply can balance savings. The shortened supply chain reduces mileage to save on fuel consumption and minimize time risk.

64 Optimize transportation processes not just for distance, but for total expected time. Carrier collaboration and automated processes reduce mileage and carbon emissions. Ensure orders are shipped on time, to the right location, and in the right quantities for successful first-time deliveries. Track and plan for total expected time costs rather than just by distance or mapping.

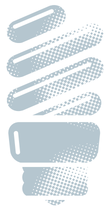
65 Use slot-booking applications that provide greater flexibility and exceptions. Look for an application that allows you to schedule arrival and departure appointments at docks to ensure the distribution center has the right team and equipment to facilitate loading and unloading to reduce wait times and idling. Make sure they can adjust easily to appointment changes and suggest alternatives.

66 Automate manual processes. Automating procurement, sourcing, inventory, logistics, and order management limits the use of time, paper, and other resources.

67 Consider DC bypass. If you have retail operations or customers near a particular port, but don't operate a distribution center in the area, find a deconsolidation center close by to direct-ship products. This could significantly decrease your carbon footprint—and save considerable money, too.

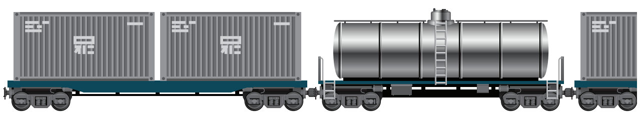
68 Track trailer cube utilization. Study and measure contents, weight, and cube utilization of trailers and containers. Determine whether you use all the volume you can. This allows additional pallets, boxes, or cases onto outgoing loads and reduces transits. Be careful to understand when the cube is not fully utilized because weight–not volume–is the limiting factor.

69 Participate in SmartWay. The many carriers and companies that participate in the Environmental Protection Agency's SmartWay Transport Partnership have made significant strides in reducing energy use. Even if your company has not been able to participate, try to work with partners that do.

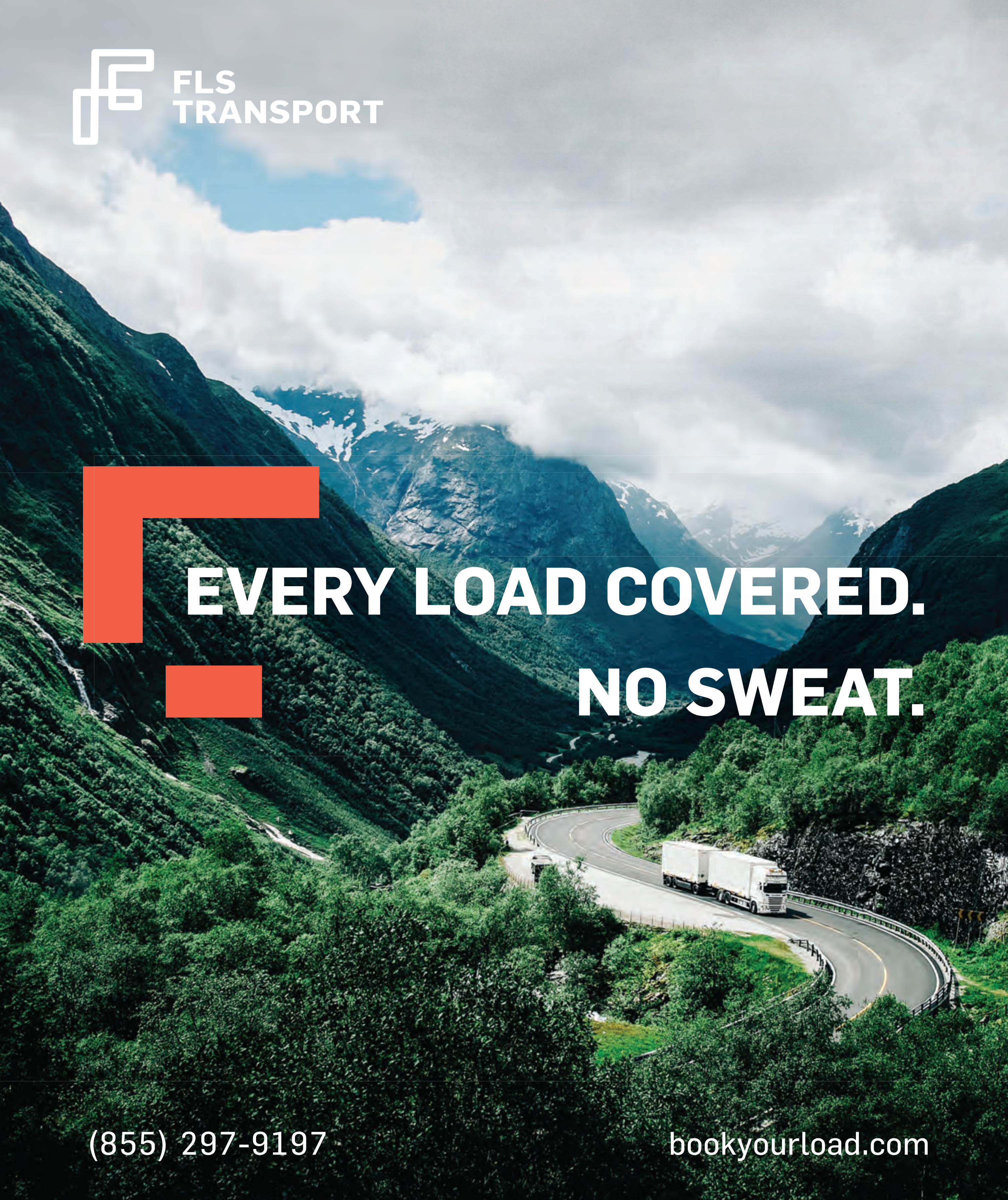


71 Invest in lighting changes. Switching from halide or fluorescent to fixtures such as T5 or T8 lamps may result in using 70 percent less light-related electricity than you once consumed, potentially racking up big savings. Consider using natural light at your facilities where possible and appropriate.

72 Evaluate packaging for the tradeoff of costs and protection throughout the chain. Letting suppliers choose supply chain packaging is akin to shipping dollars out the door because most tend to err on the side of over-protection. Retool this largely untapped area of your supply chain to make your packaging work smarter, not harder. Work with suppliers and customers to determine the right amount of packaging to balance protection and costs. Explore the use of reusable packaging.



***70 Consider rail when possible.** Trains are a far greener form of land transportation than trucks because they emit two-thirds less carbon dioxide. Rail transport is also attractive when fuel prices are high. Use rail as a leg of your products' journey when you can.*



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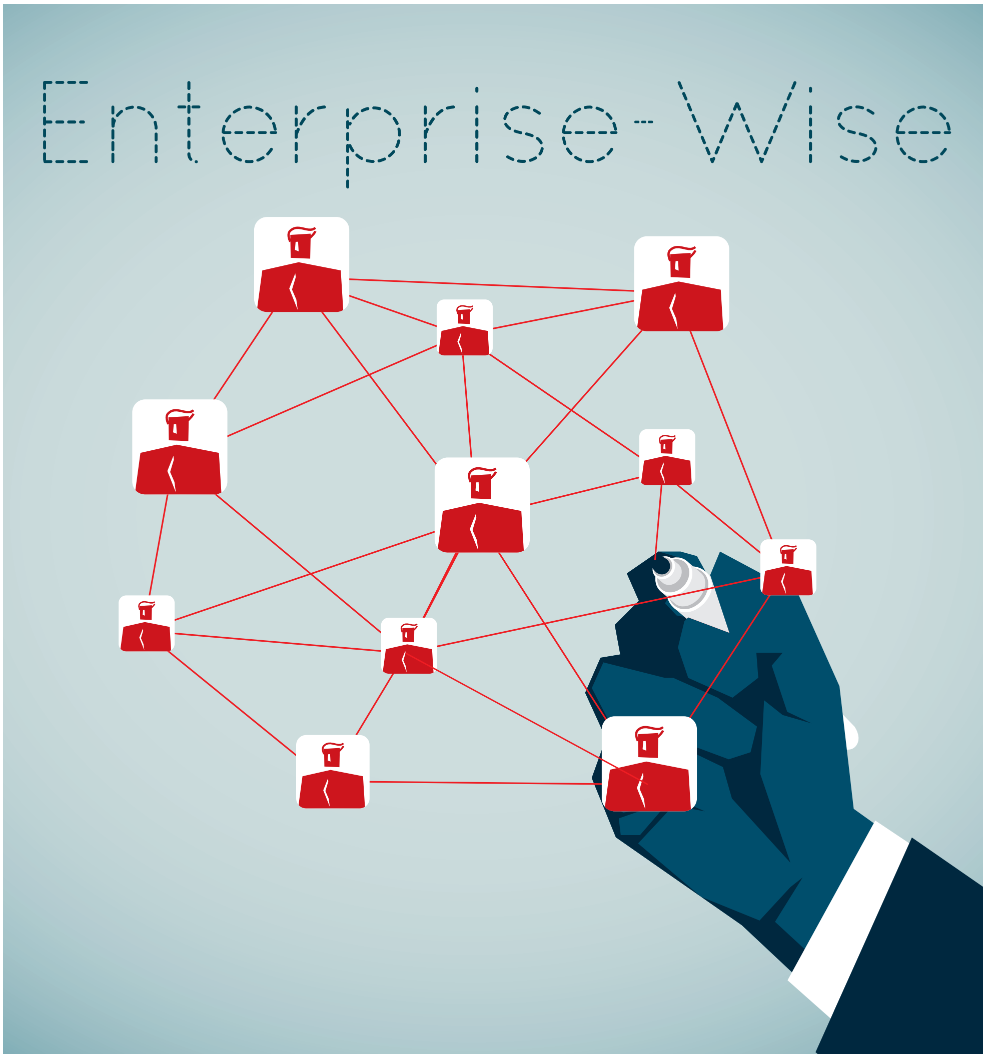

Taking a higher-level view, these tips help with the big decisions affecting the overall supply chain. Get advice on developing your SC network, competing in e-commerce, and using vendor managed inventory.

73 Utilize postponement strategies to move more SKU options closer to customers and react to changing business needs. With the ability to customize products using postponement strategies, you're able to stock fewer SKUs upstream, which reduces the cost of carrying and managing inventory in favor of more end customer SKUs downstream. With value-added operations close to the end customer, you can delay product configuration until the last possible minute to respond more precisely and accurately to customer demand.

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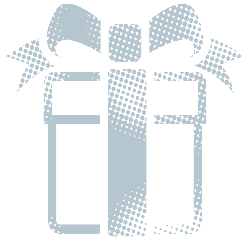
74 Get products shelf ready. Value-added services such as price marking, tagging, and display building help to streamline the process of getting products on store shelves.

75 Set up pilot sites and areas to test operations improvements. Before rolling out processes to improve operations, test the idea on a smaller scale at a pilot site to cultivate data and make necessary adjustments. When encountering issues such as quality control and returns, determining and executing the right solutions can be a challenge. Fine tuning strategies in smaller designated areas allows for maximizing efficiency before rolling out solutions across the network.



76 Expand product offerings. From building gift baskets to creating twin-packs, value-added services help give your customers more buying choices.

77 Determine if demand uncertainty indicates the need for multi-echelon vendor managed inventory (VMI). Require VMI providers to perform the direct capture of demand data from end customers, allowing intermediate storage facilities to replenish more accurately. The predictive power of this application smooths demand variation and supports economic order quantities while considering customers' individual demand profiles.

78 Evaluate SKUs and refine pick strategies regularly across the business. Business changes with each season and order. Some SKUs no longer belong in the mix; some need expansion. Staying on top of order characteristics is critical to long-term efficiency. Conduct an inventory optimization study regularly and tap data analytics to determine what products to put where and how to pick them.

79 Compare automated VMI tools to manual VMI. Automated business process tools that utilize exception-based alerting to proactively manage the process enable you to eliminate errors, stock-outs, and emergency shipments. By automating the process, you can roll out standardized enterprise-wide VMI processes and inventory management controls, and scale your operation.

80 Understand your competitors' omni-channel capabilities. Future growth will come mainly from omni-channel capabilities and fulfillment strategies that are not currently in place. Compare your supply chain against your competitors, utilize industry or private benchmarking databases, and map out competitor nodes as the platform for change in your organization.

81 Run a supply chain network evaluation every six months. Frequent network evaluations enable sound decisions around SKU rationalization, cross-docking opportunities, node constraints, and regional distribution center locations. Utilize a top-tier network strategy tool that supports multiple types of partners and total cost of ownership.

83 Think like Amazon, but don't BE Amazon. Be different. Differentiate yourself by offering a unique product or service. At the same time, learn from how Amazon manages its operations.

84 Diversify local, on-demand delivery options. With the rise of services such as Uber, Sidecar, Deliv, and TaskRabbit, widening distribution options are changing the nature of on-demand delivery. Though these businesses are relatively new, test them and see what works for your business.

85 Make the back end of your website produce accurate visibility of availability and true pricing. Ensure the buying process is as seamless as possible. For example, make sure orders placed online show accurate availability and are connected to fulfillment processes for faster delivery to the customer. Be transparent with your final order costs, including shipping charges, to avoid cart abandonment.

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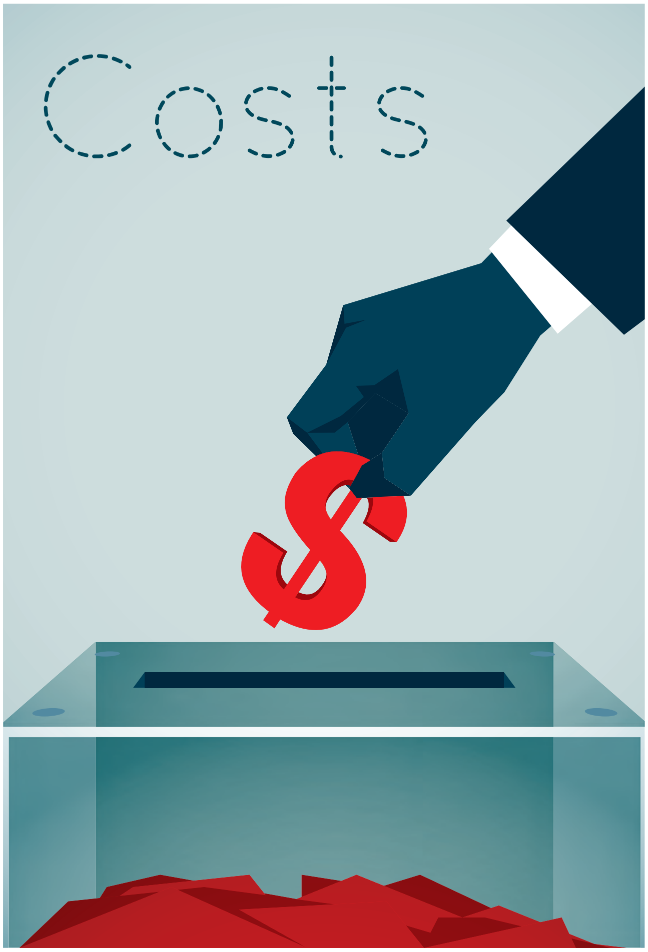
Select site locations with labor pool availability in mind. *When selecting a DC site, it is critical to choose a location with a workforce that has the education and experience required to run your facility properly. Also keep that labor pool in mind when thinking about selecting partners or 3PLs.*

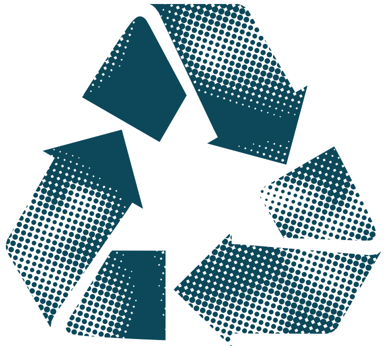


Use these tips to look for opportunities to both reduce costs and delight customers by cutting freight spend, optimizing route planning, and reducing packaging costs.

86 Shorten supply chains to reduce total costs. Onshoring and nearshoring create a shorter supply chain that lowers fuel usage, eliminates tariffs, reduces administrative time, and lowers landed costs while reducing the risk of a supply disruption.

87 Build and test prototype packaging. Work with the packaging materials and configurations your simulations have helped you select based on true overall costs to obtain, use, and dispose. Real-world experience reveals which packaging recommendations are as durable, executable, and feasible as proposed. Include contractual language that holds suppliers equally accountable for packaging efficiency.

88 Recheck your freight classifications. With significant differences in the cost to transport each of the National Motor Freight Traffic Association's 18 different classifications, it pays to periodically check to ensure all products traveling in your shipments are being classified correctly.



89 ***Dispense with your disposal processes.*** *Don't just eat the cost of your plastic/cardboard waste's haul away and disposal (close to $200 per ton). Many businesses such as polymer companies need this kind of trash—and some are willing to haul it away for free or pay for it. Look into this option for packaging disposal savings.*

90 Link routing software to live vehicle tracking. Linking routing software to live vehicle tracking enables you to compare planned routes against actual routes. This allows you to detect unplanned activities such as drivers taking detours or regular delays at customer sites. It also helps identify areas of slack in your planning setup that will improve productivity. The resulting changes in standard procedures will help cost reduction efforts.

91 Look into impact, shock, or tilt indicators. These devices let you know when a potentially damaging behavior such as jolting or bumping has taken place, adding accountability to package handling. They also allow you to assign financial penalties if built into a contract.

92 Eliminate wasteful touches. By studying touches and removing non-value-added activities, companies shorten lead times and save money.

93 Find more efficient partners that can share the workload or take over. Collaborate with an outside firm so you can focus on your core competencies. With a co-managed approach, you can maintain the control level you desire, whether that means continuing to handle transportation planning and carrier management in house or outsourcing that function.

94 Understand and reduce cost-to-serve. Gain understanding of true cost down to a customer and product level with an analysis that incorporates transportation, production, customer service, and raw materials costs. Look for opportunities to consolidate orders, convert to lower-cost transportation modes, and even prune products and customers.

95 Reduce or eliminate expedited shipping. Expedited shipments are sometimes unavoidable, but you can implement strategies to manage those costs. Utilizing a TMS platform to identify expedites helps you quickly see cost and transit time so you can begin to increase cost impact understanding and change behavior.

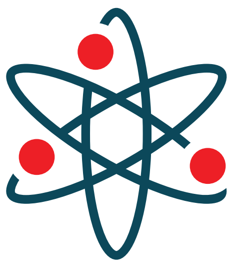
96 Identify, track, and avoid accessorial charges. Carriers price accessorials, such as lift gate or non-commercial delivery, at a premium. Lower and shift the charges by passing them on to the consignee or consider the use of a courier or cartage company for final delivery.

97 Model what-if scenarios with simulation systems. Modeling the consequences of changing vehicle sizes, drivers' hours, delivery frequencies, and delivery locations helps you make decisions without having to invest time or money to see the results. This requires an upfront investment in software, expertise, and time, but may produce high long-term ROI.

98 Time your heaviest pickups and deliveries for shortest overall distances. Vehicle weight can have a huge impact on fuel consumption levels. Since heavier loads consume more fuel, they should be dropped off first. If they can't go first, collect heavy items last so you are only paying for transporting them back to your depot.

99 Invest in proper packaging and think total lifecycle. Preparing freight in the right packaging curtails damage claims and makes shipments more suitable for transit. The right packaging is not necessarily the one that best guarantees safe arrival. There may be tradeoffs that allow for some level of acceptable damage for a savings in packaging costs. Make sure you understand the total lifecycle cost of the packaging.

Optimize network design. *Creating the most efficient supply chain lowers costs by eliminating underutilized and potentially unnecessary assets, facilities, processes, and suppliers. Network modeling software and analytical tools ensure optimal networks that deliver high customer service levels while staying agile to meet fluctuating demands.*



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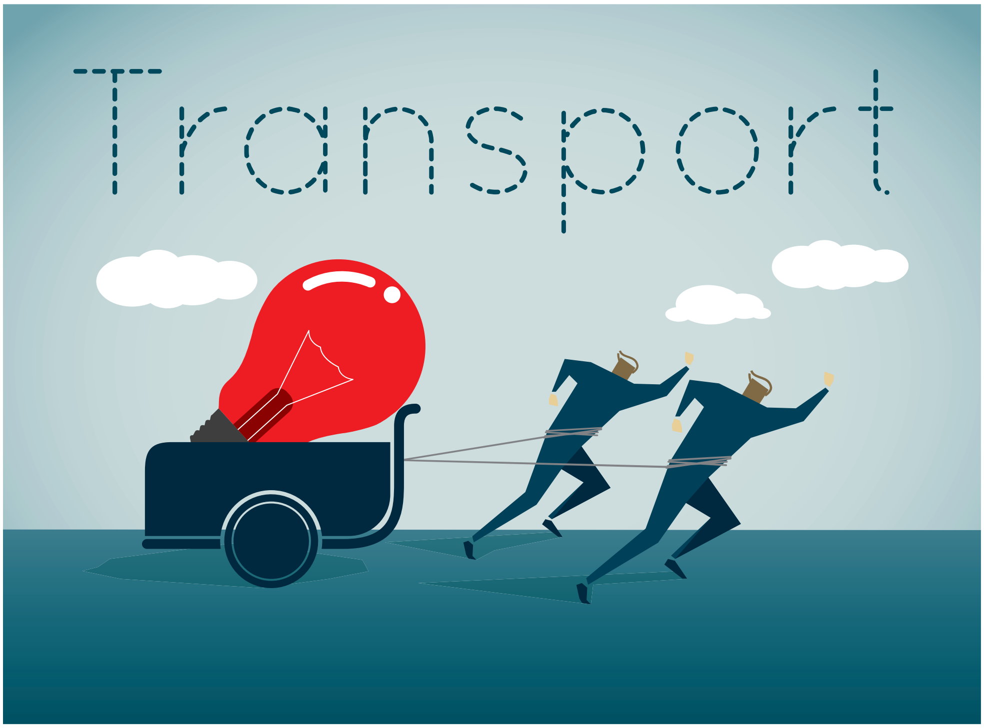


One of the most important aspects of logistics is getting the right products to the right place at the right time at the right cost, in the right condition, along with the right information. Use these tips to improve routing, understand CFR shipping rules, get better at last-mile delivery, and become more efficient at intermodal transportation.

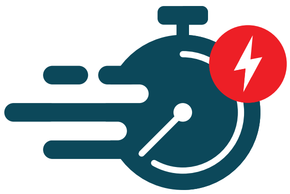
101 Make live vehicle tracking a core capability. Live vehicle tracking allows managers to detect anomalies in route times and distances so they can act immediately to control costs. Comparing planned to actual routes ensures drivers are following the plan. If any deviation occurs, customers can be alerted to delays.

102 Ensure your software systems are able to re-optimize deliveries continually. As new orders are added or issues arise, a system that continually re-optimizes schedules will maximize efficiency by taking into account delivery areas, available resources, and existing deliveries already confirmed.

103 Consider "what-if" scenarios for shifts in resources and processes you tend to take for granted. Using historic data to study shipments (overall contents, not vehicles or modes), prepare for vehicle size changes, shifting driver hours, and alternative delivery locations for distribution networks to improve transport efficiency.

104 Base your rate guide on your overall logistics strategy. Factor in the importance you place on using asset-based carriers versus third-party logistics providers, customer service standards, and cost savings goals.

105 Choose transportation providers with the customer in mind. Know the delivery criteria your customers are looking for, and select transportation providers accordingly.



106 Contract by more than price and sell that importance throughout the company. It is not all about the rate when choosing providers. Reliability by schedule adherence, punctuality, or timeliness also is critical. Apply and experiment with values for each to help with decisions.

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

108 Communicate delivery timing early, often, and by a mix of channels. Never assume that sending one pre-delivery scheduling message is adequate, because it could easily get lost or overlooked by busy customers. Instead, communicate the particulars of each delivery window to every customer more than once via a mix of channels to reduce misunderstandings and prevent costly not-at-homes.

109 Invest in better last-mile visibility tools. During shipment, few things are more important to consumers than reducing uncertainty regarding location and timing. Differentiate yourself from competitors by providing real-time, last-mile connectivity within your

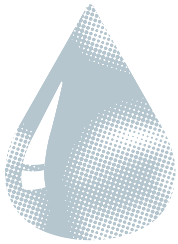
110 ***Communicate route guide expectations clearly so what dictates success and failure is clearly understood.*** *Ensure that you carefully communicate carrier awards, expectations, and compliance guidelines with anyone using your routing guide, as well as with your carriers. This includes key information such as ship-to and ship-from locations, drop-trailer, and labeling requirements.*

company to give customers the visibility they want. This may require linking to a variety of contract last-mile providers.

111 Offer rapid resolution of consumer package issues. If a consumer package shipment is damaged, inaccurate, or incomplete, have your delivery team send a replacement request while still at a customer's home. It demonstrates to your customer that your company is working toward a swift and seamless resolution. It also can cut as much as a full day off the replacement process and build loyalty.

112 Treat the final mile as part of your brand by using the right partners. Develop a clearly defined delivery protocol working with a carefully selected team of core providers and carriers who understand exactly how your company wants to craft its brand's customer experience. Also, implement quality control measures to ensure that any delivery provider you use follows your protocol and delivery experience road map.

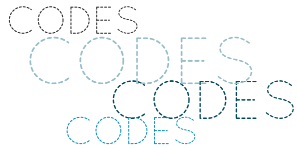
113 Use multi-period planning for more efficient routing decisions. Multi-period planning decides the best delivery patterns for each customer, ensuring multiple deliveries to the same customer are sufficiently spread out across the planning period, while also combining deliveries geographically and balancing workload across the period. Allocating delivery profiles in this way ensures you meet customer delivery requirements, while also minimizing transportation costs.



114 Ensure proper documentation regarding dangerous goods. Shipping papers should include required product information for people farther down the transport chain. Ground transport into the United States requires dangerous goods information to be recorded on the bill of lading. Shipping by air or ocean carrier under International Civil Aviation Organization (ICAO) or IMO regulations usually requires a specific dangerous goods declaration.

116 Connect your intermodal network on a common platform. Get closer to capable, leading, quality providers with data integration or an efficient multi-tenant portal to standardize processes and establish consistent requirements. Having all the transportation players on one platform gives a clear view of shipment data and service provider compliance.

117 Meet all regulatory markings and packaging requirements. Select the appropriate UN-specified packaging. It is imperative to understand the UN specification markings on the packaging selected. Also, verify the packaging is specifically authorized for the type and quantity of dangerous goods intended and via the transport mode you select. Review both the specific packing instruction and the marking section in the regulations to ensure you meet all requirements.



118 Determine the correct set of rules for your shipment. When shipping by ground in the United States, the right set of rules is almost certainly the 49 CFR parts 100-185. When shipping by air, the ICAO technical instructions, or one of its derivations, is most often the correct choice. When shipping by ocean carrier, refer to the International Maritime Dangerous Goods Code.

119 Determine if your shipment requires a placard on your vehicles or containers. If the load is large, or contains certain categories of dangerous goods, placarding may be required for the vehicle and/or container where the DG is loaded.

120 Look into supplier and partner direct shipment capabilities. Ask suppliers to ship some orders directly to customers. Look into sharing fulfillment operations with other omni-channel companies hoping to accelerate shipping times. Leverage 3PLs' or carriers' cross-docks, especially if they are already located close to your key consumer markets.

Don't underestimate the importance of packaging condition on delivery satisfaction. *External packaging that is less than pristine may cause the customer to question everything from the product's actual condition to your company's integrity. If any item is delivered with dust or tears, don't assume your customer will overlook it. Correct it or change the packaging before it gets to the customer.*

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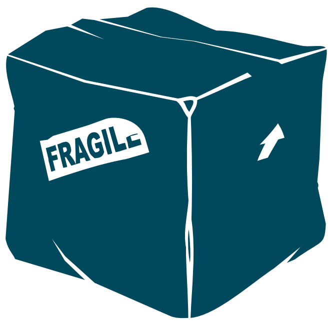
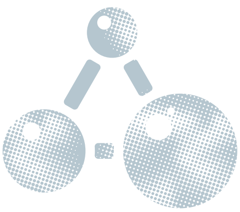


Your people are your best asset. Use these tips to boost your own skillset, and develop and retain a high-performance workforce.

121 **Look for development opportunities everywhere.** Learning opportunities include conferences, webcasts, blogs, magazines, books, white papers, vendors, and workshops. Listen closely to varied perspectives, experiences, successes, and failures.

122 **Establish a teaching and learning culture.** Learn from and teach others by determining what you do well and what others do well, then spending the time to network and develop yourself and others. Take advantage of association opportunities to learn and share experiences.



123 **Develop networks of networks.** Build and nurture relationships, getting to know people from all facets of the supply chain sector including association members, vendors, partners, event speakers, and the media. Put network development on your calendar and reach out to the networks of your networks.

124 **Create a "great to work for" presence on social media.** Show potential recruits what it's like to work for your organization by highlighting examples of your company's biggest successes or top performers on your website and social channels. Encourage strong performers to share their successes on their social media.

125 **Provide organized and clear training programs.** Employees obviously benefit from professional development and skills training opportunities, but pointing to development programs also helps with recruiting talent who want to be developed. As new technologies and business models continue to shift, you can secure talent by offering additional in-house or contracted training to close any skills gaps.

126 **Offer paid internships.** Paid internships or scholarships are a great "try before you buy" opportunity that is mutually beneficial for students and for the future of supply chain organizations. Providing paid opportunities to students is becoming one of the top draws of young people with potential to the field.

127 **Emphasize career paths.** What does a career path at your company look like? When will there be opportunities for promotion or advancement? These are questions you should anticipate from job seekers and be prepared to answer before they are even asked.

128 **Build respect for cultural differences.** As labor pools grow more diverse, make sure your leadership team and team members understand various cultures. Encourage all to share their heritages in creative ways.

Transportation requires a lot of trust and sharing of high-quality information, particularly if you want to establish long-term relationships. Use these tips to learn how to improve shipper/carrier relationships and become a shipper of choice.

129 Pay on time. Ask carriers what makes a preferred shipper, and their number-one answer is usually on-time payments. Everyone wants to get paid according to the terms of the contract.

130 Use data and tool sharing. Shippers expect carriers to provide real-time data on shipments, and carriers have gone to great expense to do so. In return, be willing to invest in options that provide smooth, accurate data transfer without extensively modifying code and procedures on either side.

131 Communicate freight claim procedures. It's a common misconception that freight claim management is confined to the claims department. In reality, departments ranging from receiving to purchasing play an important role in ensuring freight claims are paid and processed properly. Clearly communicate the role each department plays in freight claim management.

132 Treat drivers well. Anything you can do to make your facility more driver-friendly helps your carriers retain drivers, which reduces their operating costs to save money. A long-term driver will know your business and your procedures, and makes pickup and delivery more efficient.

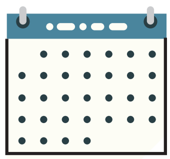
133 Create a carrier mix to spread risk and increase innovation. Many shippers give all their freight to one carrier, but that can hurt you in the long run. Create a pool of core carriers to alleviate risk, and increase innovative options for on-time delivery efficiency.

134 Make transactions easier for service providers. Standardize your business requirements for shipment acknowledgement, scheduling, en-route event capture, proof of delivery, and billing. When capacity is tight, quality carriers gravitate to the shippers who are easiest to work with.

135 Monitor quality of customer interactions. Provide accurate information and treat and service customers well. A good relationship at all levels of the organization is the best way to ensure a healthy shipper/carrier partnership.

136 Track transit time. Some carriers assign LTL shipments a lower priority than other shipments due to capacity constraints. As a result, your shipment could take longer to reach its destination. Keep track of your transit times to make sure carriers move your LTL freight expeditiously.

137 Give complete information and realistic schedules. For prepaid freight from your vendors, just as with managed pickups, issue orders with clear instructions regarding your merchandising policy and scheduling appointments. One option is to create a link on your company's website where carriers can easily obtain scheduling and policy procedures through apps, email, or text.



138 Look for best fit for long-term wins. Work with carriers to determine which

lanes and freight work best. Carriers no longer take all the freight offered to them. Collaborate with carriers to ensure you add profitable business to their network. This will solidify a long-term relationship that will save you from costly changeovers.

139 Track and communicate arrival and departure time performance. Minimize contention with carriers by offering an accurate and efficient system to capture arrival and departure times. The system should publish instantaneous reports to share with your partners.

140 Treat carriers like partners. Your carriers are supply chain partners and deserve to be treated with the same respect as customers. Be friendly and responsive and expect the same of them.

141 Follow through and follow up on commitments. Carriers base their prices on the data provided. Supplying inaccurate data or not shipping in the lanes and tonnages according to commitment could lead to renegotiation and changing carriers sooner than anticipated. Share performance data and concerns regularly.

142 Provide superior data accuracy and timeliness. Good data is important to carriers during the bid process. In addition to lane and tonnage data, provide freight characteristic percentages and monthly volumes to help carriers plan appropriately with regard to locations and any specific freight characteristics, as well as for seasonal changes in volume.

143 Communicate regularly. Hold quarterly meetings with carriers to review performance metrics, new services and options, business pressures, and to strengthen the relationship. Discuss high-cost issues, so you can implement strategies that reduce costs as opposed to raising rates.

144 Supply a drop and hook program. A drop and hook program, when drivers drop their trailer at a customer location and hook to another trailer, is ideal when supply chain partners can't make live loading work efficiently. Secure your yard with 24/7 access for carriers and backhauls to help the flow of traffic in and out of your facility.

145 Use a web-based portal for appointments. An online portal allows supply chain partners to book or amend appointments or check on bookings status 24/7.

146 Review insurance policy value and liability limitations. Insurance isn't often an issue because shipping companies offer a variety of policies to cover your freight. However, it is important to pay attention to liability limits, and get extra insurance if needed.

Supply chain security is becoming more important as the growth of both data sources and collaborations expand. Use these tips to minimize losses of both goods and data through theft, fraud, hackers, and errors.

147 Use tracking devices on shipments and assets. Utilize covert tracking devices to help recover stolen loads. It's important to place the device where thieves can't easily detect it. If you track trailer locations by GPS, you can be notified of theft faster and, in some cases, prevent thefts entirely.

148 Monitor and review vendor access logs. You may not have direct control of vendors, but you do have control over what they can access and when. Regularly review your logs to identify normal behavior or any discrepancies. Some technologies can help automate and enhance this task. Frequently change logins and passwords.

149 Use data analytics scans of transactions. Take a proactive approach to mitigating supply chain fraud by employing analytics as part of the invoicing process. Use data already resident in your enterprise resource planning systems to run fraud tests and other analytics that can identify anomalous or erroneous billing.

150 Conduct regular supplier evaluations. The front-end approval process should not be the end of your supplier assessment. The players within the supply chain change frequently as employees come and go, and suppliers get bought and sold. These events can change the level of risk in a relationship, so regular reevaluations are crucial.

151 Realize that security is not your top talent. Read the latest transportation security or risk management-oriented newsletters. Join a freight security network or two to gain some knowledge and resources.

152 Spread out the risk by paying attention to load values. Track load values. When you ship high-value loads, consider putting lower values of freight on each shipment to reduce risk of loss.

154 Make your transportation assets stand out from the crowd. Consider using trailers with unique markings. The more unique the appearance of the trailer, the more likely law enforcement will be able to spot it on the road if a theft has been reported. Cargo thieves know this, which is why the majority of stolen trailers have minimal markings.

155 Review vendor incident response plans. Always make sure vendors have an incident response plan in place before conducting business with them. If there is a data breach on the vendor's end, you need to be part of the plan and not find out the hard way. Make sure vendor response plans include a communication strategy and mitigation controls.

156 Know and regularly review your partners. Increasing reliance on supply chain partners can leave enterprises vulnerable. Take time to thoroughly vet new suppliers. This vetting should include detailed background checks, visual relationship mapping, and business intelligence reviews to identify potential conflicts of interest, indicators of financial distress, or other misrepresentations.

Verify, verify, verify. *Many thefts occur by virtue of so-called fictitious pickups, where a shipper or intermediary has inadvertently sent a rate sheet to a thief impersonating a legitimate motor carrier. Make sure the trucks picking up loads from your shipping facilities have real trucking company names on them, and that the MC/DOT numbers on the tractors correlate with those names. Use safer.fmcsa.dot.gov to verify names and MC/DOT numbers of authorized motor carriers.*

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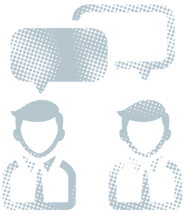


158 Establish data steward requirements. This applies to both your company and your vendors. Implement some sort of data ownership or stewardship. If data issues arise, ensure there is a liaison in place to help your company and your vendor communicate more effectively. Make certain both parties understand what proper use of responsible data means.

159 Review cloud security and storage policies and performance records. Cloud services are increasingly in demand, but they can create security and storage issues. Validate the security and storage features of your system before you purchase it. Regularly review vendor performance, not just with your data, but also by tracking any data breaches or issues reported by other clients of the vendor.

153 Embed security standards in contracts. *One of the most effective ways to improve cyber security in your supply chain is to make partners uphold clear standards in contracts. It is best to use a cyber security framework such as NIST Cyber Framework to achieve a shared understanding of standards and expectations.*

FILL OUR TIP JAR

What advice can you offer to optimize supply chain management? Share your best tips and we'll feature them in upcoming editions. Email: editor@inboundlogistics.com

PAY YOUR OWN WAY

New supply chain finance strategies let shippers and carriers keep cash in their wallets.

by Merrill Douglas

It's the classic win-win: Companies that buy a product or service get one month or more to pay, while sellers get their money in just a few days. Trading partners have used factoring, supply chain finance, and similar strategies for some time to maximize their cash flows. Today, though, advanced technologies are increasing the variety of available financing options.

Probably the simplest strategy buyers and suppliers use to optimize cash flow is a discount for early payment. For example, a seller's invoice stipulates payment in 30 days but allows the buyer to take 2 percent off the price if payment arrives within 10 days. This strategy is also called dynamic discounting.

Some companies choose this method to get a better return on their money than they could by hanging onto cash—say, leaving it in a low-interest bank account. "We've seen up to 20 percent annual return on some dynamic discount programs," says Michael Jud, director of product marketing at San Francisco-based Tradeshift, which operates a cloud-based network for supply chain payments, marketplaces, and applications.

A Cash Infusion

A buyer that pays early gives a supplier the infusion of working capital needed to make products or provide services. But interest rates have been rising, and many buyers need capital for mergers and acquisitions. Those conditions provide an incentive to hold onto cash as long as possible. "So they're turning to third-party financial institutions for supply chain financing," says Bryan Nella, senior director of supply chain thought leadership at Infor, the New York-based firm that operates the GT Nexus supply chain trading platform.

One traditional source of third-party cash in supply chain transactions is factoring. A factoring company generally offers its services to small sellers—trucking companies, contract manufacturers, suppliers of materials or components, or others.

Small firms might not have access to traditional bank financing. "The best way to manage their liquidity is to find a third party that will step into that cash flow position," says Erik Meek, CEO of FreightRover, a freight payment services firm in Indianapolis whose solutions include factoring for motor carriers. The factor buys invoices from the carrier at a discount, giving the small company immediate cash. Shippers then pay the full value of their invoices to the factor in 30 days, 45 days, or whatever payment terms they have established.

The Factoring Factor

RTS International, part of Shamrock Trading Corporation in Overland Park, Kansas, provides factoring to exporters around the world, focusing on those that sell to companies in the United States and Europe. It conducts some of those relationships, mainly in the apparel and footwear industries, through the GT Nexus platform. Outside that platform, RTS provides factoring for companies in many industries.

"Instead of waiting 30, 60, or 90 days to get paid on invoices, our customers submit those invoices to us," says Luis Mondragon, vice president of RTS International. "We pay them 80 to 100 percent of the total invoice within 24 hours of the request."

In its general business—outside the GT Nexus platform—RTS starts its relationship with a vendor by asking for a list

Orient Craft, India's leading garment design company, uses factoring services provided by RTS to mitigate the risk of cash flow disruptions due to bankruptcy and gain immediate cash liquidity.

of companies it sells to. "We look into which of those buyers we can finance, the ones my credit department will approve," Mondragon says. For each buyer, RTS considers its transaction volume with the seller, the payment terms it offers (30 days, 60 days, or longer), and the country where it operates. Those variables help determine what discount RTS will require when it buys the seller's receivables. "Then we make the proposal, based on that specific volume and risk, to the approved buyers," he says.

The process on the GT Nexus platform is a bit different. Staff at Infor identify supplier-buyer pairs already using GT Nexus to conduct transactions, and they ask the vendors if they need financial services. "If they do, we get engaged in the conversation," says Mondragon.

Once a vendor becomes a customer, RTS can provide factoring for the vendor's sales to other customers as well—either through GT Nexus (if the buyer uses that network) or outside of it.

Mitigating the Risk

One company that uses GT Nexus to receive payments from RTS is Orient Craft Ltd., which supplies ready-made garments and home furnishings to retailers in the United States and the United Kingdom.

"We recently started a relationship with RTS to factor invoices from our customers, such as Zara and Abercrombie and Fitch," says Anoop Dhanda, the company's finance director. "RTS mitigates the risk of cash flow disruptions due to bankruptcy, provides us with immediate liquidity, and further saves our banking limits."

RTS averts disruptions by monitoring the credit profiles of Orient Craft's customers, alerting the vendor if the buyer faces financial challenges that might keep it from paying its bills.

Once Orient Craft ships its products, it enters details about the invoices, packing lists, and transportation documents on the GT Nexus portal for approval by GT Nexus. "The process takes two to three days maximum, from uploading the details to release of export proceeds by GT Nexus," Dhanda says

Another option involving a third party is supply chain financing, also known as reverse factoring, or quick pay. In this case, the third party makes an initial arrangement with the buyer, rather than the seller.

FreightRover, for instance, approaches shippers and transportation brokers, offering to pay carriers on their behalf. If a carrier agrees to the shipper's regular payment terms, FreightRover makes the payment at no extra charge. But a carrier that wants a quick payment from FreightRover can get that, at a discount.

Because it advertises using the FreightRover payment service, which pays carriers once they deliver, long-haul trucker Tradewinds has an easier time finding capacity for its customers.

Blockchain Provides Trust Funds

Because blockchain technology provides an unalterable public record of transactions, it can also increase the level of trust in finance arrangements. That's the theory behind a new product, Tradeshift Cash, that supply chain network Tradeshift has been piloting with a freight forwarder in Europe.

Here's how it works: A vendor of products or services goes to the Tradeshift platform with a set of invoices, looking for financing. "Tradeshift Cash creates a market using the blockchain," explains Michael Jud, director of product marketing at Tradeshift in San Francisco. "The system won't necessarily identify the vendor, but it does confirm it's a trusted party."

An investor—an institution or an individual—agrees to fund that collection of invoices, giving the vendor cash in exchange for a subsequent payment from the buyer. The blockchain records the trust factors for all parties involved in the transaction. It also organizes the transaction, stipulating where payments will go, from whom, and when.

The blockchain provides information such as the buyer's credit worthiness. This allows the investor to evaluate the risk attached to each transaction when making an offer. "Or the investor could bundle several investments to create a balanced portfolio of some risk and some confident opportunities," Jud says.

Tradewinds, a long-haul, dry van carrier in Westfield, Indiana, uses FreightRover to pay the independent contractors who haul its customers' loads. "Most carriers now want to be paid once they deliver, for cash flow purposes," says Benjamin Cook, the company's president.

When a carrier sends proof of delivery, that's the signal to make a payment. "We indicate that on the FreightRover platform, they pay the carrier within 24 hours, and they charge the carrier a fee, from 1 to 5 percent," Cook says. The shipper pays Tradewinds, typically in 30 days, and Tradewinds pays FreightRover.

Capacity Cure

The quick payments seem to be helping Tradewinds find capacity for its customers. "Because we advertise that we utilize the FreightRover payment service, we're having an easier time getting carriers," Cook says.

TriumphPay in Coppell, Texas, provides supply chain financing mainly for transportation brokers. The goal is to get quick payments to carriers that haven't made arrangements with factors.

About 80 percent of brokers already offer their own quick pay programs to carriers. "But they typically haven't been super effective, because the broker's job is to get the load moved, not to push the quick pay," notes Brandon Bauer, vice president and business development officer at TriumphPay. TriumphPay streamlines the process, making it easier for companies that aren't factoring to get accelerated payments without infringing on brokers' cash positions.

Not every carrier chooses quick pay or factoring. Larger carriers don't usually face the same cash flow problems as smaller companies, so they may prefer to forego the discount. "If they can wait 30 days, they're issued the full payment," Bauer says.

When a shipper opts for supply chain financing, rather than relying on carriers to sell their invoices to factors, it gains a simplified process. "Traditional factoring involves Uniform Commercial Code (UCC) filings and invoice validation," says Meek. "Shippers receive bills from thousands of different places; they have to do all their own three-way matches." With supply chain financing, the shipper pays only the service company, which then makes payments to all the carriers.

Trading partners on the Tradeshift or GT Nexus platform also can take advantage of supply chain financing. In both of those cases, the financers are banks or other investors, rather than the companies that operate the platforms.

For vendors, one benefit of the platform model is competition, as more than one bank on the network might offer to provide financing. "A seller could look at multiple banks and get a better offer," Jud says.

Also, supply chain financing often provides better credit terms than a small company could get on its own. Consider the case of a large fashion brand that wants to extend its payment terms to 45 days. Those terms might be tough on an overseas contract manufacturer, so a bank operating on the GT Nexus platform offers to finance the purchase and pay the manufacturer in five days.

"Instead of getting paid, say, $100, they do the financing and get paid $95," says Heidi Benko, vice president of solutions, strategy and marketing at Infor Supply Chain Management. The bank agrees to just a 5 percent discount because the fashion brand's credit rating is excellent.

Pin It to the PO

The market also offers other variations on supply chain financing. One that's available through GT Nexus is export financing, which comes into play earlier in the export cycle. Rather than making a payment when a vendor issues an invoice, a bank or other investor might pay the vendor when the buyer issues a purchase order (PO).

This type of financing carries a bit more risk than invoice-based financing. Because the supplier hasn't yet produced the product, there's less assurance that the buyer will pay.

"But suppliers need funds to keep production going, to buy materials," says Benko. That's why they seek PO-based financing.

Because this is a more risky situation, banks typically don't finance the full cost of the product, they charge higher rates, and they often require collateral. But because the GT Nexus platform displays the history of transactions between the buyer and supplier, including the supplier's track record for delivering on its promises, investors feel more comfortable about PO financing.

With the support of newer technologies, such as blockchain and wireless apps (*see sidebars*), the market will soon offer even more options for buyers and sellers looking for ways to optimize their cash. ■

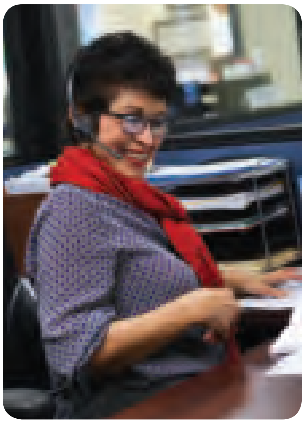
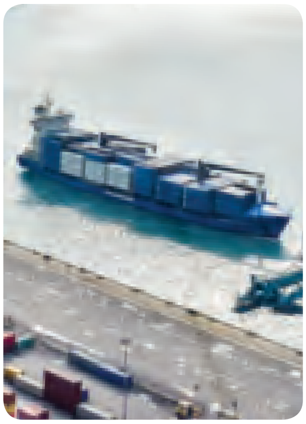
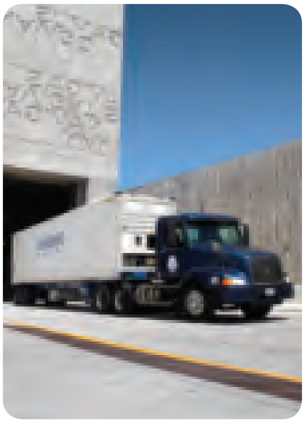
Cash in Hand 24/7/365

Truckers that can't wait even 24 hours to receive payment from a factor will be interested in a new mobile technology solution from FreightRover in Indianapolis. The program will allow independent truckers to receive payments not just during business hours, but at any time of day, any day of the year.

"Transportation is a 24/7/365 thankless job," says Eric Meek, CEO of FreightRover. An owner/operator who accepts a load needs liquidity to pay the costs of hauling that load.

"We want to instantly make the money available on the owner/operator's phone, or on a card, through a solution that will let them withdraw from an ATM without fees, and get that cash distributed as fast as we possibly can," Meek explains.

Eventually, FreightRover might be able to use GPS data transmitted from a truck's electronic logging device (ELD) to signal when it's time to release a payment.


TODAY'S WAREHOUSE

ARMED FOR SPEED

TECHNOLOGY INNOVATIONS AND NEW APPROACHES TO SIZE AND LOCATION ARE REINVENTING HOW COMPANIES FILL ORDERS AT THE WAREHOUSE.

BY KAREN M. KROLL

As more consumers and businesses buy online, many shippers—including those that typically haven't transacted directly with consumers—must find ways to efficiently fill two kinds of orders at their warehouses: traditional pallet orders and single items, or "eaches," from e-commerce orders.

While some shippers eventually will establish separate fulfillment centers for e-commerce orders, few can justify them just yet. Despite explosive growth, e-commerce currently accounts for slightly less than 10 percent of overall retail sales, the U.S. Census reports. So, many shippers are juggling various order types within the same location.

>> To Eaches His Own

This makes financial sense, but often brings operational challenges. Bulk and eaches picking use different models and require distinct employee skills, says Victoria Brown, research manager, global supply chain execution with market intelligence firm IDC. The racking and warehouse layout typically change too.

Another challenge is the makeup of many consumer orders, which often include higher-velocity products, along with "one-offs" or items purchased less frequently. This may mean splitting order fulfillment between two warehouses—say, one that's close to the consumer and carries more popular products, and another that's farther away and handles less popular items. "Splitting orders is expensive, as it boosts labor and transportation costs," says Ben Conwell, practice leader in the e-commerce group with real estate firm Cushman & Wakefield.

To address these challenges, shippers are deploying cutting-edge technical solutions, including robotics and artificial intelligence. Many are changing the fulfillment center model, shifting from massive warehouses located far from metro areas to smaller or "micro fulfillment" centers that can fit in even dense urban areas.

The growing use of mobile automation tools, such as robots, contrasts with many traditional distribution centers where "automation—conveyors and sortation equipment—is bolted to the ground," says Adam Kline, senior director, product management with Manhattan Associates, a supplier of supply chain management software. To be sure, these tools still work in many high-volume applications and aren't likely to disappear any time soon.

Yet more warehouses are deploying robots that can roam the floor to retrieve and bring items to pickers, cutting the time employees spend traveling to retrieve the items they're supposed to pick. Indeed, travel is estimated to account for more than half of most pick tasks. "Goods-to-operator robotics can help eliminate that," says Bruce Stubbs, director, supply chain marketing, Honeywell.

A picker may be assigned a designated area, while robots functioning as "pseudo-people" move from aisle to aisle, bringing inventory to him or her. "This provides the benefit of automation without significant disruption to the distribution center's layout," Kline says. "You don't have to add another wing to the building. Just add robots."

Moreover, robots' capabilities continue to grow. Five years ago, most robots handled only repetitive tasks. Today, many can analyze and pick specific items.

Companies don't have to automate all their product handling to gain compelling benefits. "Companies can automate 10 to 20 percent of their processes and still benefit," says Joel Reed, chief executive officer with IAM Robotics, a provider of flexible autonomous robotic material handling solutions.

"YOU DON'T HAVE TO ADD ANOTHER WING TO THE BUILDING. JUST ADD ROBOTS."

This level of automation allows many companies to shift employees away from repetitive tasks to functions in which they can better leverage their skills, such as intricate kitting operations.

Within the next year, logistics provider DB Schenker plans to deploy IAM "mobile manipulation solutions"—robots that can pick up and transport goods—within operations it manages.

IAM Robotics has partnered with DB Schenker to bring flexible robotics and automation into warehousing. The goal is to help 3PLs find new ways to offset a shrinking labor pool and the demands of high-velocity e-commerce business models.

"The target is to move labor away from easily repeatable tasks," says John Stikes, director of innovation and e-commerce with DB Schenker Americas.

While any quantity of robots can boost efficiency, most firms start reaping scalable benefits once they've installed at least two to four robots, Reed says. They'll get even more bang for their buck when they can run them multiple shifts over multiple days.

>> Need Robotics? Just Hollar

InVia Robotics is working on "brownfield deployment," says Dan Parks, chief operating officer with the company, which provides autonomous mobile robots for supply chain warehouses. That is, it's introducing robotics in existing warehouses, and leveraging

the layout, shelving, and other equipment already in place. This can lower costs and speed time to deployment. Its robots can handle items weighing up to about 40 pounds, Parks says.

Holllar, an online dollar store, looked into robots to help it scale during peak holiday season, when staffing can just about double, notes Octavio Reyes, director of operations and systems. In addition, wage rates and other employee costs continue to increase.

"We looked at automation to help with our growth," he says. Automation also can help Hollar more effectively use its warehouse space and avoid—or at least postpone—future real estate purchases, he adds.

PHOTO: HONEYWELL

End-to-end supply chain visibility starts at the scan point.

In choosing a robotics solution, Hollar turned to inVia because its solution can both pick and bring the product to each picker, maximizing their efficiency. Some other solutions require a human to pick items and put them in a tote, which then travels to the picker.

>> Accommodating the Robots

Hollar currently uses about 60 inVia robots. With the sales growth it's expecting, that number will grow to between 120 and 160 robots. Hollar made a few minor changes to its warehouse layout to accommodate the robots, Reyes says. For instance, employees placed new, robot-readable labels on the pick shelves.

The robots have helped Hollar's seasoned pickers more than double their output. Within about one year, the robots are forecast to boost these pickers' productivity by three to four times.

In addition to limiting the distances employees must travel, the robots—in contrast to humans—don't become tired and less productive toward the end of their shifts.

>> Let's Get Small

Massive distribution centers located far from population centers and that support large geographical areas are becoming less common. More companies are establishing smaller centers, closer to major population areas. They may still utilize large regional distribution centers, but often to support store fulfillment and in some cases, to replenish hub distribution centers.

It's not just proximity to customers that is driving shippers' decisions to locate closer to metropolitan areas. They're also concerned about the availability of workers, especially during peak season. E-commerce orders, which require employees to pick mixes of individual items, require more labor than traditional store replenishment operations, where pallets of products move through a distribution center.

Some companies are considering opening distribution centers in major metropolitan areas. Given that land in those areas is more expensive and harder to come by, they've been forced to think smaller. In some cases really small—to "micro fulfillment centers."

Within these micro centers, companies are stocking a ruthlessly edited selection of inventory, often limited to the fastest-moving items. If the centers can hold the 20 percent of stockkeeping units that account for roughly 80 percent of volume in the surrounding region, they should be able to significantly lower overall supply chain costs, Stubbs says.

ROBOTS HELPED HOLLAR'S SEASONED PICKERS MORE THAN DOUBLE THEIR OUTPUT.

An efficient layout and state-of-the-art automation also are key to successful micro fulfillment centers. Ideally, each order proceeds automatically until it's ready for the customer.

>> Albertsons Takes Off

In October 2018, Albertsons Companies, one of the largest food and drug retailers in the United States, announced it was partnering with Takeoff Technologies, a provider of automated fulfillment center technology, to pilot a micro fulfillment center.

Albertsons' centers will range from about 5,000 to 10,000 square feet and will be located within existing stores, says Narayan Iyengar, Albertsons' senior vice president of digital and e-commerce. Instead of using store shelves, which are designed for browsing, these will be arranged to optimize picking. They'll house the fastest-moving products, although employees in the center can run into the rest of the store to get any slower-moving items customers order.

This approach allows Albertsons to use space it already owns. Based on the company's calculations, Albertsons will need about one micro center for every 20 to 30 stores, Iyengar says. It hasn't yet announced where it will locate the centers.

This also will allow Albertsons to optimize how it routes its trucks. If Albertsons were to pick online orders at each retail store, it likely would need about two trucks at each store. By concentrating online orders within a micro fulfillment center, it should be able to reduce its overall number of trucks.

"It's the best of both worlds," Iyengar says. That is, Albertsons can leverage the automation typically seen in large warehouses, while remaining close to consumers, cutting transportation times.

Even as robots currently command center stage, most still require software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KEYS TO BOOSTING WAREHOUSE EFFICIENCY

Along with technology, process and change management are critical to speeding warehouse operations. Some guidelines:

- **Review current processes before implementing technology.** Make sure they're logical and relevant before introducing technology that will automate them.

- **Accurately define both the challenge and your goal.** That way, you're best positioned to map an effective route between the two.

- **Take a "pragmatic" approach when deploying robotics.** "It has to be for a purpose and has to make business sense," says John Stikes of DB Schenker Americas.

- **Encourage employees to be open to changes in technology, processes, and roles.** Reluctance to consider even small changes can hinder the usefulness of any new technology.

- **Build to accommodate technology.** While today's robots may not require an entirely new warehouse, it's still important to prepare the facility for them. This means, for instance, leaving enough aisle space that robot and pickers can work productively side-by-side, even during peak seasons.

- **Know your customer.** While smaller warehouses can be located closer to population centers, they're also not able to accommodate a massive breadth of inventory. Shippers need to know and stock the items customers in the surrounding area are most likely to order.

to drive them. Intelligent warehouse management systems (WMS) can exploit the efficiency robots provide by ranking the orders they'll fill, typically by the required delivery times.

"The new robotic solutions, with an intelligent WMS driving them, become a powerful tool," Kline says.

>> Optimizing Fulfillment

"Evolving predictive analytical methods" also are helping to optimize warehouse fulfillment, according to Bertram Salzinger, chief executive officer of inconso AG, a logistics software firm based in Bad Nauheim, Germany.

Engelbert strauss and inconso are building a new production, logistics, and sales center in Germany that will integrate robotics and automation into the logistics process.

These tools can analyze data from across the supply chain network to predict customers' behavior, and thus, the demand for products.

Similarly, comprehensive tracking and tracing capabilities that provide end-to-end visibility are critical, both for regulatory compliance in industries such as pharmaceuticals and for operational efficiency.

Inconso is partnering with engelbert strauss, a workwear manufacturer, to build a new logistics center in Schlüchtern, Germany. It will feature an automatic storage and retrieval system, automated material flow with integrated robots, and pick-by-light workstations, among other elements. The center's goal is to increase productivity and speed replenishment times, says Matthias Fischer, head of IT with engelbert strauss.

Along with technology advances, new approaches to warehouse operations also can speed processing. One that's known as "order streaming" or "waveless picking" can boost efficiency in both manual and automated environments, Kline says. It's based on the concept that more consistent equipment utilization, rather than working in batches or waves, boosts efficiency.

Here's how it can work: As orders become available, an optimization engine matches them to capacity, whether that's determined by the labor force, or hardware, such as the number of packing stations, or something else. As capacity increases—say, more employees are scheduled—a signal tells the WMS to pull more work to the floor. If some orders are priority, they move to the head of the line. The goal is to keep equipment and employees consistently working near capacity, rather than in peaks and valleys.

>> What's in the Mix?

Advances in warehouse technology appear likely to continue. As they do, future warehouses and distribution centers will deploy a mix "of forecasting, optimization, and analysis methods, coupled with simulations, machine learning algorithms, user interfaces, and the integration of automated guided vehicles and robots," Salzinger says. Together, these technologies can drive efficiencies and accuracy in the use of materials, labor, and space.

Even as logistics and fulfillment technology advances promise increased efficiency and lower costs, they're also powering a "democratization of warehouse operations," Stikes says. "Gone are the days when companies had to spend millions of dollars to automate a warehouse." ■

SETTING UP SHOP

NEW FULFILLMENT STRATEGIES BLUR THE LINES BETWEEN E-COMMERCE AND TRADITIONAL RETAILERS.

BY MERRILL DOUGLAS

Brick-and-mortar and digital shopping are merging in the minds of many consumers. Of the 165 million Americans who did some kind of shopping from Thanksgiving Day through Cyber Monday in 2018, 89 million shopped both online and in stores. That's nearly 40 percent more than the number who channel-hopped that way in 2017.

Increasingly, consumers want to be able to buy and receive products in whatever combination of methods they find most convenient.

"The customer journey today is very different than it was 10 years ago," says Kent Zimmerman, vice president, digital, at retailer Shoe Carnival in Evansville, Indiana. Not only do customers want options that blur the boundary between brick-and-mortar and e-commerce, but they also want access to the same product assortment however they shop.

"We don't want the customer experience online to conflict with what customers expect when they go into the store," he says.

Changing customer expectations—fostered by innovations from companies such as Amazon and Walmart—are forcing traditional retailers to keep re-examining how they fulfill customer orders, and to adjust the supply chain infrastructure accordingly, including the role local stores play.

Betting on BOPIS

One critical option in this new landscape is buy online, pick up in store (BOPIS). According to a 2018 survey of 3,000 U.S. consumers conducted by Kibo, which provides technology for omnichannel commerce, 67 percent of participants had used that option in the previous six months.

If an item is in stock locally, a customer who chooses BOPIS can take possession right away. If the retailer ships it from a warehouse to the store, the company will probably waive the shipping charge. Retailers like BOPIS because it gets consumers into physical stores, where they might decide to make additional purchases.

Omnichannel technology can help encourage those add-on sales by giving store associates access to a customer's complete purchasing and browsing history. "Retailers get a holistic view of who this person is and what they like, and can make suggestions based on that information," says Danielle Roberts, senior product manager at Kibo in Dallas.

One challenge retailers face when they offer BOPIS (or its cousin, reserve online, pay in store) is inventory accuracy. A retailer that lacks a clear view of product available in all of its stores, at all times, risks disappointing customers who choose BOPIS. "The last thing you want is for a customer to walk into the store and have an associate tell them, 'Just kidding. We don't actually have that product,'" Roberts says.

Some retailers have developed value-added services, such as curbside pickup, for BOPIS customers. Many Walmart stores now feature robotic pickup towers and automated lockers that quickly deliver items to BOPIS customers.

One hardware and home improvement retailer that uses Kibo's software lets customers indicate online that they want products, such as grills, pre-assembled before pickup.

A store may use an interface between its order management system and its point-of-sale (POS) system to speed and smooth in-store pickups, or other processes that use store inventory.

RETAILERS THAT LACK INVENTORY VISIBILITY RISK DISAPPOINTING CUSTOMERS WHO CHOOSE BOPIS.

"We provide an application that notifies stores about orders that need to be picked from local inventory and put aside for collection in-store, or to pull out all the documentation to ship it from the store," says Nick McLean, chief executive officer of OrderDynamics, a vendor of retail order management technology, based in Richmond Hill, Ontario.

Ship-from-Store

As more retailers start using stores as pickup points, many also use those local shops as e-commerce fulfillment centers. When a retailer ships an order from a store that's close to the customer, the customer gets the order faster, and the retailer pays less for transportation.

But ship-from-store also poses some operational challenges, especially for boutique or specialty retailers. "Typically, they have very small back rooms that are not set up to efficiently pick, pack, and ship," says Sean McCartney, executive vice president, operations services at Radial, an omnichannel technology and operations firm based in King of Prussia, Pennsylvania.

Even large retailers may run into trouble. McCartney cites one client that dialed back on its ship-from-store strategy after hiccups in the process prompted customer complaints about inaccurate orders.

A fulfillment center has systems in place to ensure that associates pick and pack the correct items. "Imagine

Canadian industrial products retailer Princess Auto uses an order management system that shifts all its e-commerce fulfillment to its retail stores.


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a store with gondolas of merchandise," McCartney says. "It's typically not as structured for associates to find and ship items."

While some store associates take on duties that once belonged to the fulfillment center, others double as delivery drivers. Walmart has been using store employees to deliver e-commerce orders during their end-of-shift commutes. This new duty is strictly voluntary, Walmart said when it announced the program in 2017. Associates decide how many packages they will deliver, set size and weight limits, and choose the days when they will make deliveries.

This model makes sense for a retailer the size of Walmart, which has stores close to a major portion of the U.S. population. "If the customer doesn't want to pick the order up, the retailer doesn't have to call UPS or another partner to come to the store and deliver it," says Paul Myerson, a management and decision sciences instructor at Monmouth University, New Jersey, and author of several books on lean supply chains.

Trying on Ship From Store

Some retailers find the benefits of ship-from-store so compelling, they've made that model the centerpiece of their e-commerce strategies. Shoe Carnival, which operates more than 400 stores, is one example.

Shoe Carnival replenishes its stores from its own distribution center (DC). Before 2014, it also shipped product from the DC to a third-party logistics (3PL) provider, which fulfilled e-commerce orders. "This was not very efficient," says Zimmerman. Also, since the 3PL had the capacity to hold and ship only so much inventory, this process limited the number of SKUs Shoe Carnival could offer online.

Today, using Radial's order management system, Shoe Carnival fulfills about 95 percent of its e-commerce orders from stores.

The retailer chose this strategy in part so it could offer a much broader assortment of products online. "We went from 90,000 units on any given day to millions," Zimmerman says.

With access to the inventory in every store, the company can now offer complete size runs through its website. Also, with the order management system in place, the retailer has laid the groundwork for adding ship-to-store and BOPIS options in the future.

Shoe Carnival has set several business rules in the software to determine which store fulfills a given order. "First, we try to find stores that can ship an order complete," Zimmerman says. Within that group, the software then looks for stores near the customer. But it doesn't always choose the closest store. "The larger stores will always have the most inventory and will always bubble up to the top if we didn't put some controls in place to make sure we don't hit the same stores over and over," he adds.

In the battle to attract busy customers, retailers such as Target and Walmart are launching innovative order fulfillment options such as curbside and locker pickup and personal shopper services.

Royal Customer Service

Princess Auto, a chain based in Winnipeg, Manitoba, that sells tools, equipment, and other items for do-it-yourselfers, has shifted 100 percent of its e-commerce fulfillment to its retail stores.

Using an order management system from OrderDynamics, the retailer has been phasing stores into its e-commerce operation since late 2017, with plans to include all 46 locations across Canada by early 2019. It closed its e-commerce fulfillment center in Milton, Ontario, in 2018, transferring its employees to other facilities.

The company (founded in 1933 as a vendor of used auto parts on Princess Street in Winnipeg) used to fulfill all e-commerce orders from Milton. That caused several problems, says Dave Matthes, vice president, marketing. The facility kept running out of product, disappointing e-commerce customers who couldn't add items they wanted to their carts—even though the same items were available at stores nearby.

The fulfillment team often fell behind in its work, making it hard to promise an accurate delivery date. And shipping times varied wildly. Customers in parts of Ontario and Quebec close to Milton got exceptional service. "They would receive orders the next day without any extra cost," Matthes says. But for customers in western Canada, shipping could take up to 12 days.

A customer could call a local store to place an order and have it shipped from there. But since the store and e-commerce operations were entirely separate, a customer with a question about an order couldn't get an answer from the company's website or call center; they had to call the local store. Customers found that confusing, Matthes says.

Ship-from-store has eliminated all those problems. E-commerce customers now have access to all inventory available in retail locations. The conversion rate—the ratio of sales to

Using Radial's order management system enables retailer Shoe Carnival to fulfill about 95 percent of its e-commerce orders from stores.

website visits—has increased as a result. Shipping times are more consistent, and orders go out faster, since the stores are open many more hours per week than the fulfillment center was. "Our capability to offer better service to customers has skyrocketed," Matthes says.

Consolidated processes, thorough training, and centralized procurement of shipping materials have created efficient pick, pack, and ship operations in the stores. And the new strategy has produced strong results. "Top-line sales have been growing steadily as we've added stores," Matthes says.

One Digital Pool

Like Shoe Carnival and Princess Auto, many other companies are re-engineering their processes to better consolidate e-commerce and store operations.

In the past, retailers often set up their brick-and-mortar and e-commerce channels as separate universes, each with its own way of capturing orders and its own inventory. "Now everybody has to represent the brand as a single entity," says McLean. "It's all about omnichannel." Retailers need to pull all their inventory into a single pool and use it to the greatest advantage.

While that inventory may sit in one digital pool, when it comes time to pack and ship an order, a retailer still needs to consider the physical location of its products in multiple stores and, perhaps, in one or more warehouses. An omnichannel retailer must be able to optimize fulfillment, drawing product from the locations that make the best sense.

SHIP-FROM-STORE PROVIDES E-COMMERCE CUSTOMERS ACCESS TO ALL INVENTORY IN ALL RETAIL LOCATIONS.

One obvious choice is to fulfill an order from the location nearest the customer. But when retailers configure the Radial Order Management (ROM) system, fast fulfillment isn't their only consideration, says McCartney. Cost is important, too—not just the cost of transportation, but also the cost of letting merchandise sit in a store so long it goes on markdown.

For example, if a sweater is languishing in a store 75 miles from an online customer who wants to buy it, it might be more profitable to ship that sweater than to pick one from a warehouse 30 miles from the customer's home. "Retailers would leverage our technology to help minimize the markdown impact for the inventory that's currently residing in hundreds or thousands of store in the network," McCartney says.

Another important consideration arises when a customer orders several items at once, and they're not all available in the same building.

Consider the case of a retailer that receives an order for three pairs of shoes. "They may have one pair available in that size only in the warehouse, another in a store, and the third in the store they're going to fulfill from," says McLean. If those shoes arrived at the consumer's home in three separate packages, on three different days, the consumer would find that inconvenient, and the retailer would rack up excess shipping charges.

To avoid that problem, OrderDynamics' software would arrange for the retailer to transfer the other two pairs to the store chosen to serve as the fulfillment point, do a quality check, and then ship them in a single package.

"Consolidation saves retailers money, because they're only shipping one package," says Charles Dimov, vice president, marketing at OrderDynamics. "And it certainly improves customer satisfaction."

Novel Approaches

Several other novel omnichannel retail strategies have emerged in the past few years. One is the use of showrooms, where customers check out products before placing orders online. Another is collaboration between Amazon and stores on college campuses, which have replaced shelves of textbooks with fulfillment lockers. "A student orders a book, it shows up in the locker the next day, and the school gets a cut," Myerson says.

Without a doubt, retailers and customers can expect even more innovations as retailers refine their omnichannel strategies. ■

CPG Success

Top-Shelf Solu

To succeed in a challenging omnichannel marketplace, successful CPG businesses are reaching for efficient manufacturing operations and new supply chain and transportation models.

By Karen Kroll

Campus Protein's (CP) current supply chain highlights just how the consumer packaged goods (CPG) industry has changed over the past 10 to 15 years. CP produces and markets nutritional supplements, healthy snacks, and related items, primarily to college students but also to the general public. The company's sales take place entirely online. Most are through its own website, although CP's private label products also are available through Amazon. "Our model always has been a virtual retail store," says Russell Saks, chief executive officer.

Orders are entered online and routed to one of the eight CP distribution centers in the United States, whichever is closest to the customer. "We've spent a lot of time on logistics and making sure shipments get to customers expeditiously," Saks says.

On each campus where CP has a presence, the company's online platform notifies student "campus reps" of orders. The reps follow up with customers to answer questions and provide additional product information.

Campus Protein also offers "CP Select," a program that allows customers who pay an annual $50 fee to obtain free shipping on their orders.

As Campus Protein's story illustrates, profound changes are taking place within the supply chains of most CPG companies, including the rising dominance of e-commerce and the proliferation of delivery channels. While these shifts are impacting most companies, CPG firms have been hit harder than many others.

Running Fast

"CPG companies are shifting to a new environment," says Guy Bloch, chief executive officer with Bringg, which offers a delivery logistics technology platform. "They're running fast and figuring out how to handle new challenges."

The areas where many CPG customers have dominated, such as the aisles of most grocery stores, account for a shrinking portion of consumer sales, says Nate Rosier, vice president, strategy consulting, with enVista, a consulting and software

Campus Protein, a provider of health supplements for the college market, attributes its CPG success to competitive prices, rapid delivery from eight U.S. warehouses, and a deep understanding of its core customers' priorities and needs.

solutions firm. Not only are more consumer purchases moving online, but many retailers are dedicating more space to upstarts and local firms. That leaves many companies fighting over a shrinking amount of in-store real estate.

Many retailers also are attempting to move closer to a just-in-time inventory approach. "They don't want to hold inventory but they certainly want it available," says Mark McEntire, senior vice president of operations with logistics management solutions firm Transplace.

Most also want their goods delivered within a tight time frame. That can be a challenge when a hiccup throws off a CPG's production schedule, or congestion at the retailer's dock forces a driver to wait to unload.

The Endless Aisle

Online sales channels present their own opportunities and challenges. The "endless aisle" available online means retailers can offer vastly more stock-keeping units (SKUs) than most physical stores can hope to. While that offers CPG companies more opportunity to sell their goods, it also boosts supply chain complexity and makes it difficult to maintain productivity on the factory floor. "Manufacturing lines that used to run five to 10 SKUs now run 15 to 20," says John Knapp, partner and managing director with Boston Consulting Group.

The rise of online marketplaces, and particularly the behemoth known as Amazon, is a similar mixed blessing. Online marketplaces offer access to millions of customers, yet CPG companies that sell through them risk losing control of their customers' data and loyalty to the marketplaces. "The CPG company becomes a dark kitchen or warehouse," Bloch says.

Strategies for Success

To succeed in this changed environment, CPG companies need a supply chain strategy that allows them to meet customers' growing preferences to make purchases across multiple channels. These strategies include online orders for home delivery, buy online pickup in store (BOPIS) orders, purchases in physical stores, and purchases made through the companies' own websites and catalogs and via online marketplaces.

As if that wasn't complicated enough, CPG companies also need to offer delivery options that range from nearly immediate—perhaps by bike or car—to one or two days. "Buyers are channel-agnostic and expect to interact with a brand seamlessly across all channels," says Bobby Banerjee, vice president, program management with logistics provider Kane Is Able.

As more retailers move toward a just-in-time inventory approach, ensuring factory operations remain on schedule becomes even more critical for CPG companies. Both advanced manufacturing technologies and traditional manufacturing levers, such as minimizing change-over time, can help.

For instance, today's sensors and data solutions can detect why a manufacturing line stopped, with a high enough degree of accuracy that the company can conduct preventive maintenance to minimize the risk that it happens again. Moreover, many sensors can be deployed on traditional manufacturing lines.

Today's sales and operations execution (S&OE) solutions can connect systems that previously didn't talk to each other, thus enabling real-time decision-making. One example: Rather than carrying large buffer stocks of inventory in case bad weather prevents a delivery truck from completing its route, a CPG company can combine communication technology and GPS solutions to change the truck's route to avoid the bad weather in the first place.

Even as a greater number of SKUs move through factories and warehouses, few CPG companies can afford to throw more labor at their processes. Instead, they need to leverage technology, such as drones that can count boxes on the shelves and check inventory levels, says Glenn Richey, professor of supply chain management at Auburn University.

RFID Redo

Some solutions providers are seeing a resurgence in interest in radio frequency identification (RFID) solutions to track items through the warehouse. Unlike barcode applications, RFID doesn't require line-of-sight between the user and the RFID tag.

Moreover, RFID labels that cost more than 30 cents 10 to 12 years ago now can cost 10 to 12 cents each, notes Tim Wills, chief marketing officer with

Cuckoo for Cocoa: A Sweet Consumer Product

Some tasty facts about cocoa production and distribution:

Chocolate begins with the cocoa beans produced by the Theobroma cacao tree; the name means "food of the gods."

Each tree produces approximately 2,500 beans. It takes 400 cocoa beans to make one pound of chocolate.

A farmer must wait four to five years for a cacao tree to produce its first beans.

Some cacao trees are more than 200 years old, but most provide marketable cocoa beans for only the first 25 years.

About 70 percent of the global cocoa supply hails from approximately 1.5 million family-owned cocoa farms in West Africa. The average size of each farm is 7 to 10 acres.

Because cacao trees are so delicate, farmers lose an average of 30 percent of their crop each year.

Worldwide, 40 million to 50 million people depend upon cocoa for their livelihood.

It takes two to four days to make a single-serving chocolate bar.

Chocolate contains two doses of cocoa butter—the natural amount from the bean, plus an extra dollop to bump up creaminess.

– National Confectioners Association

Peak-Ryzex, a provider of solutions for digital and mobile environments.

Another solution that's capturing interest is printer applicators. Effectively scaling a manual label-application process is nearly impossible. "Machinery that automates the application of labels to boxes in line for outbound shipping reduces the human labor required," Wills says.

To meet customers' demands for ever-shorter delivery times, Campus Protein and other CPG companies are locating distribution centers closer to large consumer populations. Many CPG companies also are leveraging technology platforms that allow consumers to choose from a variety of delivery options.

When it comes to transporting the goods, companies need to "commoditize the delivery market," by leveraging multiple delivery options, Bloch says. While this approach isn't new, the options have multiplied to include ride-sharing apps, as well as delivery companies like Shipt. The goal is to combine delivery methods to meet customers' preferred delivery time frame, while also minimizing costs.

No matter the delivery method used, CPG companies boost their opportunities for future sales and brand loyalty when they hold onto their relationships with their customers, rather than allowing a partner to get in between them. "It's your customer and your brand," Bloch notes.

Even as direct-to-consumer sales account for a larger portion of many CPG companies' sales, most will continue to sell through retailers. That requires IT systems sophisticated enough to comply with the varying rules—say, dictating where on the box the label should be placed—set by each retailer, says James McArdle, managing director, United States and Canada, with Stokke, a children's products manufacturer. "There are many areas for potential errors," he says.

"No matter the delivery method used, CPG companies boost opportunities for future sales and brand loyalty when they hold onto their relationships with customers, rather than allowing a partner to get in between them."

Receiver of Choice

To meet retailers' demands for deliveries that fall within a narrow time window, CPG companies may have to collaborate with them to improve conditions at their docks.

"We hear so much about being a shipper of choice," says McEntire. "But no one talks about the other half: being a receiver of choice." That means addressing obstacles such as dock congestion and limited receiving hours.

Many CPG companies want to collaborate more with retailers to address these challenges, McEntire says. However, few CPG firms come from a position of strength. Effecting change may require several companies joining

PHOTO: Peak Ryzex

Warehousing and inventory management technology solutions are critical to helping CPG retailers meet consumer demand for quick and accurate order delivery, across multiple sales channels.

forces to discuss these challenges with retailers and work for change, he adds.

Even as systems and solutions become more advanced, qualified partners remain critical. An employee with Kane Is Able, Stokke's logistics partner, realized a third-party supplier to Stokke was sending items without UPC barcode labels. Had the employee not pointed this out, the products likely would have been shipped to retailers, rejected, and charged back.

"'Doing things right the first time' is cliché but it makes all the difference in the world," McArdle says. That single mistake, if not corrected, would have led to lost sales and increased costs.

To deal with rapid growth and demand for its quality children's furniture and equipment, Stokke contracts with several third-party logistics firms that manage its warehousing and distribution operations.

Swift, Accurate Transportation

Once CPG items are in transit, speed and accuracy remain key. To achieve these twin goals, CPG companies need to combine multiple delivery alternatives to optimize deliveries based on urgency, location, and demand. For example, a restaurant chain might operate its own fleet of trucks but also use a third party or crowdsourced solution, such as Uber or Lyft, during peak times.

Given that many CPG products are time sensitive, tracking them while in transit is critical. Indeed, many CPG products, and particularly food items, face increased scrutiny and heightened expectations for traceability as they move through the supply chain.

Technologies such as telematics—an interdisciplinary field encompassing telecommunications, electrical engineering, and computer science, among others—can provide accurate information on location, route, fuel levels, and the delivery status of goods, says Angad Singh, senior manager with SpendEdge, which offers procurement market intelligence solutions.

Telematics also can issue timely alerts on truck driver actions, including unscheduled diversions and speeding. "That information helps lower overall logistics-related risks for CPG companies," Singh adds.

Industry changes and complexities have forced CPG companies to move from "playing checkers to playing chess."

Predictive Shipping

A natural next step after immediate delivery is readying orders before customers actually place them, using the concept of "predictive shipping." Amazon reportedly has a patent on a predictive shipping solution that will use customers' previous shopping history to have orders waiting and ready to go.

Predictive shipping actually has been done before, notes Auburn's Richey. One simple example: stores stocking winter boots and coats in the fall, and swimsuits in the spring.

The idea now is to raise this a level by using customers' shopping history to predict future orders, and then readying the goods for shipment. Say a consumer orders paper towels every other month. A company leveraging predictive shipping would stock the goods near the customer and send them out the instant the order is received. Or, under a subscription model, it could offer a discount to customers who accept delivery for a set number of orders at regular intervals. "It involves getting ahead of consumer behavior," Richey says.

Another way CPG companies can remain ahead, or at least abreast of, their customers' behavior is by monitoring social media conversations about their brands, capturing online consumer sentiment, and applying it to their demand forecasting solutions, says Harish Iyer, vice president, industry and solutions marketing with supply chain firm Kinaxis.

For example, if an Instagram post about a new ice cream flavor generates lots of positive buzz, the ice cream maker can use that information to adjust its demand forecast for the product.

Checkers to Chess

The changes and complexity buffeting CPG businesses show no signs of letting up. They're forcing CPG companies to move from "playing checkers to playing chess," Rosier says.

CPG companies that embrace the changes can succeed. Campus Protein, for instance, started eight years ago in a dorm room at Indiana University. It now has a presence on nearly 300 college campuses. ■

DISRUPTING THE FUTURE OF GROCERY

RETAILING

The concept of an online grocery auction is simple but the implications to the retail industry are enormous.

By Brittain Ladd

Uber has extensive ambitions to become a major player in groceries. A recent report indicates that Uber is hiring a head of grocery product with the goal to "build the organization and globally scale a brand new product offering which will fundamentally evolve how people purchase their groceries."

Uber understands the value of establishing a leadership position in the grocery industry. With sales in excess of $641 billion in 2017, the grocery industry is attracting considerable interest and investment. Amazon's acquisition of Whole Foods in 2017 was done for one reason: to transform the company into a leading grocery retailer.

The business model that Amazon and grocery retailers like Walmart and Kroger utilize is primarily focused on customers shopping for groceries inside their stores and ordering groceries online to be delivered to the home or picked up at the store. The model is fairly basic. The model Uber will create to achieve its grocery ambitions remains to be seen. What's certain is this: Companies other than traditional grocery retailers can and will severely disrupt the future of grocery retailing.

Direct to Customer in Office (DTCO)

Google "grocery retailing" and thousands of articles will appear advocating the importance and growth of online grocery sales. Currently, online grocery sales account for around 5 percent of the market. Most retail analysts predict that online grocery sales will increase to 20 percent or more by 2025.

Articles on Google make the counterargument that online sales will grow very little due to consumers experiencing continued package thefts and lacking a safe and secure methodology for receiving groceries.

What's fact and what's fiction?

We need a new retail model for grocery shopping. Instead of continuing to fight porch pirates and poor delivery economics associated with online grocery shopping–and online shopping in general–change the business model. How? By going to where the most customers are.

Direct to Customer in Office, or DTCO (pronounced Dit-co), is a business model I created to reflect the reality of life for hundreds of millions of Americans. During the day, most Americans are working at an office building, an office complex, a hospital, a university, or a manufacturing plant.

The word I use to describe the reality of corporate America is density. Executives and associates are concentrated in specific areas of cities and towns across the United States. Companies such as Amazon, Google, Tesla, Facebook, Microsoft, and Salesforce have large campuses where thousands of associates work daily.

I use the word density also because of its importance in reducing logistics costs. Why is online grocery retailing unprofitable? A lack of density in orders. Delivering a small number of grocery orders to homes located miles apart is a recipe for high costs and low efficiency. A truism in business is that unit economics associated with e-commerce don't improve with scale.

However, delivering a large number of grocery orders to a massive number of customers located on the same campus or in the same office building/office complex greatly increases order density and reduces last-mile delivery costs. Unit economics improve. A company called Byte Foods has already figured this out.

When asked by a reporter why he robbed banks, American bank robber Willie Sutton replied, "Because that's where the money is." The phrase morphed into what is now referred to as Sutton's Law and is taught to medical students in schools globally. Instead of testing for every conceivable ailment, go straight to the most likely diagnosis first.

Sutton's Law applies to commerce. Instead of trying to make last-mile delivery of groceries to the home profitable and building more supermarkets, go to where the most customers are: on campuses and universities, inside office buildings, and working at large office complexes.

Tech Companies Can Spark a Movement, Corporate America Will Follow

I am on the record as stating that Facebook and LinkedIn have the potential to become e-commerce leaders. I also believe that tech companies are most likely to create a new business model for grocery retailing. Why? Tech companies are more innovative than other industries. I focus on grocery retailing for this article but make no mistake, the concepts I present apply to e-commerce in general.

Google is a recognized leader in innovation. The company has the ability to massively disrupt grocery retailing.

When tech companies create new products, corporate America incorporates those products into its various industries. If tech companies take the lead in implementing the ideas I outline in this article, corporate America will embrace the concepts and implement them where possible.

At a high level, associates that work for the tech companies buy groceries specific to their needs as individuals. Executives and associates with families purchase groceries to meet the needs of each family member, but the order is still placed as an individual order. Millions of associates in other industries buy groceries in the same manner.

Uber, Microsoft, Amazon, and other technology companies clearly understand that the current process for how consumers buy groceries can be improved. Uber wants to create an entirely new model for how people buy their groceries. So do I. The following model is an example of how I believe we can achieve the goal of revolutionizing grocery retailing.

Apply the Concept of Pooling To Grocery Retailing

Using simple math, assume that the average individual spends $100 on groceries weekly. At the end of one year, that person spends a total of $5,200 on groceries ($100 x 52 weeks = $5,200).

> Delivering a high volume of grocery orders to a massive number of customers located in the same office complex increases order density and reduces last-mile delivery costs.

One thousand consumers spending $100 weekly on groceries amounts to more than $5 million ($5,200 x 1,000 = $5,200,000). See where I'm going with this?

Groceries are big business and grocery retailers benefit immensely from the current model individuals use to shop for groceries.

Now let's assume the following business model is utilized for buying groceries:

A commerce platform separate from Amazon and all grocery retailers is created (LinkedIn and Facebook are the two companies most capable of creating such a platform but I give the edge to LinkedIn). The platform allows tech company associates to select groceries from thousands of products. Associates place grocery orders utilizing the platform and the orders are pooled to identify the totals of all products selected. For example:

10,500 gallons of milk
1,750 bottles of ketchup
6,000 jars of peanut butter
15,000 loaves of bread
1,650 packages of chicken breast
1,200 packages of ribeye steak

When thousands of grocery orders are placed, the total volume of products by individual category can become quite large.

A New Model For Grocery Retail: The Online Auction

Unlike established e-commerce platforms from Walmart, Kroger, Amazon, and other retailers that list the prices for each product sold, the platform concept I refer to only displays products available for purchase. Why? Because in the new business model for grocery retailing, each tech company will have the option to open the platform daily or weekly to accept bids on each product from grocery retailers and wholesalers.

I want to make this point clear. I advocate that associates (consumers) will select the products they want to buy; all grocery orders submitted will be pooled; and select wholesalers and retailers that offer grocery products will be invited to bid on every product. However, in order to win the bid, a wholesaler or retailer will have to be able to meet the demand for all products and do so at the lowest price.

I advocate a model for grocery retailing that doesn't exist today but, if implemented, would significantly disrupt the status quo. Requiring grocery retailers and wholesalers to bid on products versus allowing retailers and wholesalers to set prices on individual products maximizes the purchasing power of a dollar for the consumer.

Consumers who purchase groceries individually have little to no power in reducing prices as retailers set the prices. Collaborative or pooled grocery retailing, whereby thousands of grocery orders are pooled and then bid on, maximizes the value to the customer as the lowest price will be achieved on all products. For example:

Retail price of a one-gallon container of whole milk = $2.50

Retail price of 10,500 one-gallon containers of milk purchased in bulk = $1.65 per gallon

When conducting research on this topic, models I've run identified extensive price reductions when items are bid on in bulk. Reductions in price of more than 50 percent per grocery order are achievable especially when private label products are purchased.

I developed this model for several reasons; among them was a desire to create a model that would result in prices on all grocery products (brand and private label) being lower than the products sold by Aldi and Lidl. Based on my research, I believe the model achieves the goal.

Wholesalers and Retailers: Who Has the Advantage in an Online Auction?

The concept of an online grocery auction is simple but the implications to the retail industry are enormous.

I reviewed these concepts with grocery analysts and management consultants, including operations research scientists with PhDs who I worked with at Amazon. The combined feedback helped me make adjustments in several areas.

I also spoke with four grocery executives about the concepts I outline in this article. The executives asked to remain anonymous but each provided an opinion. The consensus among the executives is that everything I describe can be implemented. The executives also agreed that they hope corporate America does not move forward with what I recommend.

"I've never heard of such an idea but this would be devastating to the grocery industry," one executive from a leading retailer said. "I agree that customers would reduce their grocery bill and logistics costs would be less."

On the surface, it would appear that an online auction favors wholesalers—Costco, Boxed, BJs Wholesale—that buy and sell products in bulk. However, this is not necessarily true. Grocery retailers on average stock 50,000 products and Walmart stocks 100,000 products. Costco only stocks around 4,000 products.

The purpose of an online auction for groceries isn't to limit product selection. In order for the concept to be successful, consumers will need to be able to order the same type, size, and assortment of products available in the average supermarket.

Grocery retailing needs to be transformed on a massive scale and consumers win when innovation is unleashed.

This means that either wholesalers/warehouse clubs will need to greatly increase the number of products they stock or grocery retailers will have to change their business models to buy more products in bulk. The latter point is among the reasons why I recommended to Kroger that it acquire online warehouse club Boxed. Grocery retailers should create a hybrid model to expand into bulk sales and distribution.

Boxed can become a leader in implementing a solution to meet the needs of companies that want to utilize an online grocery auction for their associates. Boxed has extensive technology and logistics expertise. In addition, Boxed has a growing focus on private label products.

One issue associated with an online auction is that CPG companies such as P&G, Unilever, and Kimberly-Clark would resist having their name brand products—Tide and Dove, for example—go through a bid process. The relationship between grocery retailers and CPG companies is complicated. An online auction would severely disrupt the relationship and business model between the two.

The answer to the problem is for retailers and wholesalers to maximize investments in introducing as many private label products as possible and reduce the relationship with large CPG companies. Private label brands are growing in popularity and in an online auction, they would be able to be purchased at a lower price than a name brand product.

Online CPG company Brandless would find great success taking part in an online auction for groceries as its high-quality brands could be purchased at much lower costs than name brand products. Brandless has exceptional growth potential.

Albertsons, Ahold-Delhaize, Publix, and many other grocery retailers would struggle to adjust to an online grocery auction model. Kroger, with its private label brands, relationship with Ocado, and increased focus on improving operations, would be able to adjust eventually, as would Walmart.

Amazon, however, is the company that has the best ability to create the necessary adjustments in its grocery ecosystem to take part in an online auction for fulfilling groceries in bulk. Amazon has a robust private label program for groceries as well as extensive technology, and supply chain and logistics capabilities to design and implement a strategy to serve large numbers of customers on campuses and in offices.

Distribution and Logistics

DTCO and collaborative grocery retailing have massive implications for tech companies and other corporations.

Microsoft, for example, plans to build a new campus in Redmond, Washington, which will have 131 buildings and employ 47,000 people. Without an optimized logistics network and a comprehensive strategy, it would be chaos on the Microsoft campus if packages and groceries started to be delivered in large quantities.

Amazon plans to build two new headquarters, one near Washington, DC and one in New York City. An estimated 50,000 associates will be employed between both campuses. Think of the improved economics of being able to deliver packages and groceries to 47,000 customers located on the Microsoft or Amazon campus. See the positive impact of customer density?

To make DTCO more effective and manageable, I recommend that a new logistics model be introduced. Specifically, I recommend facilities I refer to as R&R (Receive and Retrieve) be built on campuses and inside office

The DTCO model calls for building Receive and Retrieve facilities on campuses and inside large office complexes—think Google and Microsoft—to manage the receipt of packages and groceries from winning online auction bidders.

Amazon acquired Whole Foods for one reason: It wanted to transform into a leading grocery retailer.

complexes to manage the receipt of packages and groceries from the winning bidders.

The facilities would be automated to receive products in bulk (pallets) but build individual grocery orders (each pick). Technology from CommonSense Robotics, TakeOff, or KNAPP is ideal for managing order receipt and fulfillment.

Grocery distribution and logistics would have to change significantly if tech and other companies introduce the concepts described in this article.

Associates will have the option of either retrieving groceries and packages from R&R facilities before departing from work, or packages and groceries can be placed in their cars as part of a service the R&R provides.

(Note to car manufacturers: Create temperature-controlled trunks or provide an option for consumers to have temperature-controlled receptacles/coolers installed in a trunk by the manufacturer. Make the containers foldable and retrievable inside the trunk for ease of use.)

Companies that provide mass transit options for associates can introduce buses capable of storing groceries and packages, allowing associates to retrieve their groceries/packages from the bus when they arrive at their destination.

Associates will also have the option of selecting groceries to be delivered to the home, but the model I advocate significantly decreases last-mile delivery costs as order density is maximized. In addition, porch piracy will virtually be eliminated by introducing products such as the eDOR to consumers.

Don't Predict the Future, Create It

Unless something like the models I introduce in this article are implemented, the grocery retail status quo will remain, with grocery retailers having the advantage. Grocery retailer executives who read this article will make the argument that they do not have an advantage due to the notoriously low margins (average of 1 percent) inherent to grocery retailing.

I've provided consulting services to the largest grocery retailers around the world. That argument is false.

Consumers win when innovation is unleashed and, based on my experience, grocery retailing needs to be transformed on a massive scale. Online grocery ordering and delivery to the home isn't enough. Removing cashiers inside grocery stores isn't enough. (I wrote in June 2017 that Amazon will introduce technology similar to the technology in AmazonGo inside Whole Foods to eliminate cashiers. I believe this will occur in 2019 to early 2020.)

The majority of changes I see taking place in the grocery industry are incremental, not transformative. If customers still shop in stores, order groceries online for home delivery, or pick up groceries at the store, the grocery retail business model effectively remains the same.

Changing the Status Quo

What I recommend will drastically alter the status quo, increase efficiency, and reduce costs.

The retail grocery model has remained virtually the same for nearly one century. The majority of innovations introduced by grocery retailers have produced incremental changes only. Corporations pooling grocery orders and inviting grocery retailers and wholesalers to take part in an online grocery auction is innovative and transformative.

Leveraging DTCO to deliver groceries and packages where the most customers are to reduce logistics costs and introduce a new business model is innovative and transformative.

The purposes of this article are to present ideas and stimulate discussion. I do not presume to have the best ideas. The need to reimagine and revolutionize grocery retailing, however, is real.

Let the innovation and transformation begin. ■

ABOUT THE AUTHOR

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MARKET DOMINATION STARTS WITH A CUSTOMER-FIRST ATTITUDE.

THE HASSLE QUOTIENT

A NEW FORMULA FOR INDUSTRY DOMINATION

BY MIKE OGLE

What does it take to dominate an industry? Companies can be good—or even great—by focusing on operational factors they do better than anyone else.

Domination, however, starts with a customer-first attitude that makes it easy to engage with them and provides fast, low-cost solutions along with superior user experiences. You have to see it all through your customers' eyes.

That's the idea behind the book *The Unconventional Thinking of Dominant Companies: The New Formula for Market Domination* by Jim Bramlett, a 30-year transportation industry veteran. This article introduces the author's Hassle Quotient score and how the internet has changed how companies compete, then focuses on how the Hassle Quotient applies to transportation and logistics.

CHEAP, FAST, GOOD: PICK TWO

You may have heard the expression, “You can’t be cheap, fast, and good at the same time; you have to pick two.” The internet has changed the game of managing consumer expectations, Bramlett says, requiring companies to do it all.

Rather than “Cheap, Fast, Good,” however, the new formula for success is to follow the author’s Hassle Quotient. This formula for industry domination contains factors that companies such as Amazon, Uber, Netflix, Google, and Facebook do very well.

The formula starts with making it easy for customers to engage with you, shortening the time that it takes to communicate and get a solution, while reducing the amount of customer effort. Add in the need to be a low- or lowest-cost provider. Top it off by giving the customer the best user experience. Do it all and become dominant.

TIME + EFFORT + COST / USER EXPERIENCE

TIME, EFFORT, COST, EXPERIENCE: DO IT ALL

The Hassle Quotient formula adds together customer-provided scores for Time, Effort, and Cost, then divides it all by a score for User Experience.

Hassle Quotient=(Time + Effort)+ Cost/User Experience

An overall low score is best because you want low values for time, effort, and cost, then a high score for user experience. Do it all and you end up with a low overall score.

First a few ground rules. One, you don’t get to provide the values for these factors; your customers provide them by comparing you to all the competitors in your industry. Two, it is best to make it simple by providing a 1-10 point scale for each factor. For the top of the formula (time, effort, and cost), imagine laying out all competitors in an industry along a 1-10 scale from best to worst in each scoring category. For user experience at the bottom of the formula, the scores are flipped, so 10 is best and 1 is worst in the industry.

If you provide the lowest cost, lowest time, and lowest effort in the industry, the top of the formula is 1+1+1, or a total of 3. If you also have the best user experience score, a value of 10, then your company could score as low as 0.3.

If it turns out your customers actually say your company ranks at very respectable scores of 3/10 on time, 2/10 on effort, and 4/10 on cost, plus you provide a strong user experience of 9/10, then overall, your Hassle Quotient is 1.0.

If you have many customers, then take all the Hassle Quotient scores and average them to develop an overall Hassle Quotient. You could graph them out or put them in a table to see the spread of all the scores and how much they vary.

The developer of the Hassle Quotient says that industry domination, or doing it all, means three things:

• Having the lowest Hassle Quotient score
• A resulting market share that is double that of the next closest competitor
• Being the most recognized brand in the industry.

THE INTERNET CHANGES THE GAME

In a popular 1990’s business book, *The Discipline of Market Leaders*, authors Michael Treacy and Fred Wiersema told companies to focus on one thing to be successful: Learn to be the most operationally efficient, or be a product leader, or be customer centric. The message was that if you try to do it all, you only dilute your focus, which results in mediocrity. At the time, Bramlett was a big fan of the book and its message, but he says the internet has changed the game, becoming the most significant economic engine ever.

Today, to dominate in an industry, you have to do it all: Have a great website that quickly helps people understand who you are and what you can do for them and make it easy for customers by providing the kinds of intuitive tools that help them get their solutions quickly, provide low-cost solutions, and require minimum effort. At the same time, customers need to feel that they also had the best user experience.

We have all likely used at least one of the websites provided by Amazon, Uber, Netflix, Google, or Facebook. Each company has become dominant in its industry because it does it all. These companies are shining examples of the kinds of companies that would score best in their industry if they applied the Hassle Quotient.

The internet is certainly a huge influence, but not the only influence. All digital forms of communication and transactions have provided the ability to shorten transaction times and lower transaction costs. Your smartphone and all the other digital tools in your life, such as your tablet and your laptop, have all raised the bar, changing expectations for companies and restructuring relationships with customers.

THE USER EXPERIENCE

Think about your best experience as a customer. It was likely not just easy, fast, and low cost, but you enjoyed the experience more than any other in the industry. It doesn’t mean you had one of the best overall user experiences in your


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life, but for the solution you wanted, the user experience was best among all the available solutions in that industry.

Many factors make up the user experience. You might like the company's website design or navigation, the packaging, the friendliness of the people, the layout of a physical or online store, suggestions for options, information accuracy, customer reviews, or that promises made were promises kept regarding time, cost, and information.

But it goes beyond just this collection of factors, being better summed up in an overall feeling that this company was the one that made you feel like you wanted to continue doing business with them more than any other company. Every touchpoint matters.

While using considerable transportation resources of other companies, Amazon is also growing its own fleet of assets such as planes and trailers. You may have had your Amazon packages delivered by the U.S. Postal Service, even on Saturday or Sunday. Finally, it contracts with a variety of other independent couriers or smaller last-mile providers to keep the package pipeline flowing, even assisting with the startup of small delivery businesses.

Innovations? Early on, the Kindle made it easy to shop, purchase, and take your electronic books with you anywhere. Amazon Alexa has become the leading household electronic assistant. The Dash Button for reordering frequently used items has some traction in households and businesses. Going somewhat full circle, Amazon has established a variety of brick-and-mortar stores, starting with bookstores that also carry its electronics and some specialized gifts, but now adding Amazon Go convenience stores that let you walk in, grab what you want, then walk out, being automatically checked out.

Where will Amazon take us next? How will it continue raising the bar for the transportation industry? Perhaps its patents for 3D printing of products on trailers while being transported to customers seem a reach for now. So does its plan for widespread drone delivery to businesses and homes, which faces major limitations on the use of airspace governed by the Federal Aviation Administration.

However, if anyone can pull off continuing to lower its Hassle Quotient score for ease, time, cost, and user experience, it's Amazon. Bramlett firmly believes Amazon has the lowest Hassle Quotient score of any company.

LOGISTICS AND THE HASSLE QUOTIENT

Jim Bramlett has spent most of his life in transportation and logistics and believes there is a long way to go for any company in the industry to dominate and score well on the Hassle Quotient. When you have a shipment that needs to get from Point A to Point B, you aren't interested in becoming a logistics expert; you just want to serve your customer and fill an order, getting that shipment to the right place at the right time at the right cost with the right information and delighting the customer.

Those companies that make it harder to understand what they do and how it applies to your shipment, then complicate the time and effort of the transaction, don't provide clarity regarding the cost of that shipment, and keep you in the dark regarding how it is being carried out…well, they will find themselves earning a high Hassle Quotient. Remember, high scores are not good.

The transportation industry is very fragmented, with many carriers, options, rates, routes, and classifications making it difficult for shippers to engage every carrier directly on their own. Add in vetting them for proper authority to carry certain kinds of loads, whether they have the right kinds of insurance, and whether they can easily tie into a shipper's information system, plus coordinating the actual pickup and delivery process, among other details and you find that the seemingly simple process of getting a shipment from Point A to Point B can quickly get complicated.

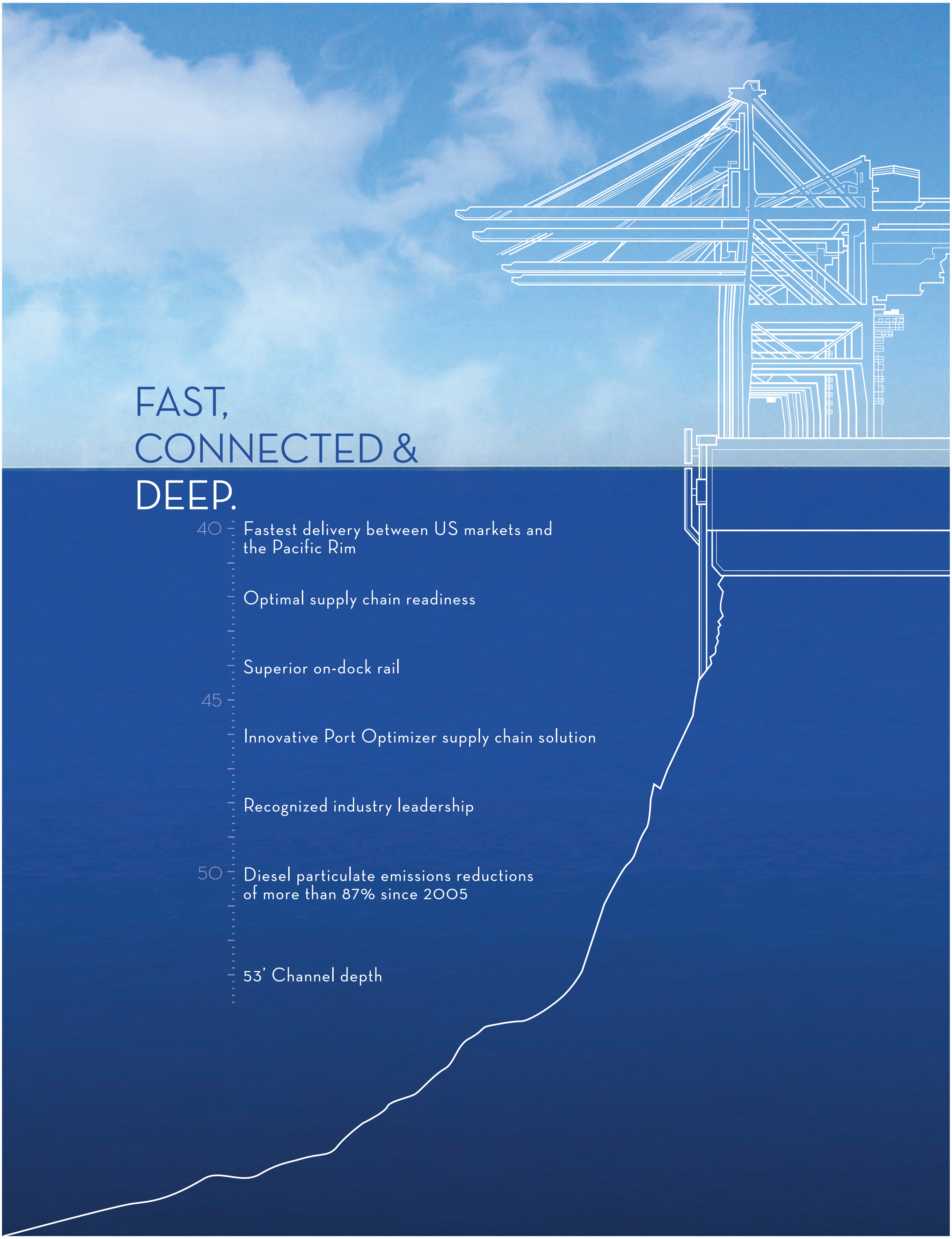
The logistics sector's fragmentation and complexity have resulted in a variety of intermediaries that link shippers and carriers, plus shepherd shipments

EVERY CUSTOMER TOUCHPOINT MATTERS

AMAZON: THE HASSLE QUOTIENT MASTER

Amazon dominates the e-commerce industry because it has mastered the factors that make up the Hassle Quotient. From its start as a small e-commerce bookseller to the giant it is today, Amazon has had a customer-focused obsession with providing the best selection and ease of ordering (single click). It raised the bar on delivery expectations (two-day free shipping with Amazon Prime or even same-day Amazon Now) and utilizing customer feedback, reviews, and purchase data to make shopping a hassle-free and low-cost experience.

Amazon has put tremendous competitive pressure on the logistics sector by growing so fast and shifting the game so quickly with so many innovations. Transportation resources, such as trucks and drivers, distribution center construction, and equipment manufacturing all become tighter as the economy expands and unemployment is low.


FAST,
CONNECTED &
DEEP.
40
Fastest delivery between US markets and the Pacific Rim
Optimal supply chain readiness
Superior on-dock rail
45
Innovative Port Optimizer supply chain solution
Recognized industry leadership
50
Diesel particulate emissions reductions of more than 87% since 2005
53' Channel depth

through supply chains. These intermediaries can help shippers lower their Hassle Quotient scores by providing services and expertise that may be difficult for shippers to develop and maintain in house.

How can freight transportation take less time and less effort, and be price competitive while providing a superior user experience? The magic lies in an Amazon-like experience of being able to describe or submit a shipment's information into cloud-based portals tied into all the best providers, allowing fast and easy classification, transparent and accurate pricing, and a best-in-class user experience that tracks shipment flows and simplifies billing, auditing, and paying of invoices.

AMAZON HAS THE LOWEST HQ SCORE OF ANY COMPANY

Sounds easy to say, but in the truckload, less than truckload (LTL), and parcel worlds, Bramlett believes the industry has not made it close to happening yet. Yes, a variety of portals have been established, but many have failed and he doesn't believe anyone has found that magic formula yet.

THE PRICING WILD WEST

Much of the baggage the LTL industry carried prior to deregulation in 1981 still exists in the industry today. "If ever there was an industry that did not practice the tenets of the Hassle Quotient, the LTL industry is one," Bramlett says.

Deregulation allowed carriers to service any territory and lanes and charge whatever they wanted. It also stirred up a Wild West of complications as companies jockeyed for position, creating a huge, unstandardized variety of options.

If you have already found a carrier and successfully classified and shipped a particular type of load repeatedly over time, then it doesn't seem so complicated after a while. However, if you have significant changes in types, quantities, timing, and destinations (including countries), then the job can be daunting.

It is enough to deal with various weight categories (generally following the hundredweight or price per hundred pounds), plus the many commodity classifications. But when you factor in the many add-on possibilities for various options, then the widely varying base and discount percentages carriers and service providers offer, it shouldn't be surprising that it is difficult to compare quotes. It is like trying to compare apples and steak.

SURCHARGES MAKE THE WEST WILDER

Next are the many additional charges and surcharges that may apply to shipments, making the West even wilder. It certainly makes sense to account for the time and costs of the various options a shipper or customer specifies.

But the author also makes the point that the industry behaves like some of the discount airlines that nickel and dime customers to death. In shipping, many charges may appear as part of invoices after the fact. The author says that fuel surcharges, in particular, have become a profit center and a dirty little secret of the industry.

The lack of upfront visibility to these charges is the author's biggest concern because it affects both the cost and user experience aspects of the Hassle Quotient. It's not just the carrier that is responsible. There is a shared responsibility for both shippers and destination customers. Better accuracy up front regarding weight and dimensions, plus accurate shipment classification and all the aspects of delivery restrictions at the destination would also reduce the high number of invoice variances the author says exist in the industry.

CAN THE INTERNET CHANGE THE TRANSPORT GAME?

Getting the transportation industry to score similar to Amazon will require simplifying and standardizing processes and improving connections between company processes and systems. Transportation Management Systems (TMS), particularly the ones that are cloud-based and link together networks of partners throughout the industry, are already helping and quickly evolving.

Early TMS systems were only for the larger companies with high shipment volumes. Now, for many shippers, their third-party logistics (3PL) providers have adopted TMS and other systems to provide carrier links, track-and-trace capabilities, international shipping, and—to manage the added complications of freight invoicing—audits and claims.

The author says that shippers navigating the waters themselves are like people trying to understand the tax code; they need to hire accountants and lawyers. 3PLs have the opportunity to apply their knowledge and experience to lower Hassle Quotient scores across the industry to make it easier, faster, and less expensive for shippers, carriers, and end customers.

SMALL PACKAGE CARRIERS AND THE FINAL MILE

Shipping small packages, particularly for e-commerce, has been easier and less fragmented with well-known names such as USPS, UPS, FedEx, and DHL. UPS, using its stores for example, will accept unboxed shipments, then pack, weigh, measure, ship, and track them. With all its locations, daily delivery to every address, weight-based-only simplified charges, and no surcharges for particular addresses, UPS scores the best overall on the Hassle Quotient, Bramlett says.

Many independent contractors also carry smaller shipments along the final mile. The author estimates there are 7,000 local and final-mile carriers in the United States, many represented by two industry associations—the Customized Logistics and Delivery Association and the Express Carriers Association.

Given the generally smaller sizes of these couriers, sophisticated information systems infrastructure is not available. The opportunity lies in creating an Amazon-like marketplace and systems capabilities for a variety of merchants, providing all the local and final-mile carriers with a marketplace that integrates with other transportation and freight systems to allow for a more seamless tradeoff between truckload, LTL, and final mile. ■

Adapted from "The Unconventional Thinking of Dominant Companies: The New Formula for Market Domination" by Jim Bramlett, 2018.

HOW TO APPLY THE HASSLE QUOTIENT

The first step to applying the Hassle Quotient to your own company and industry is to ask your customers four key questions:

1 / How much time was required engaging us compared to our competitors? [score of 1-10 where 1 is least time to engage and 10 is the most]

2 / How much effort did you have to exert to engage us compared to our competitors? [score of 1-10 where 1 is least effort to engage and 10 is the most]

3 / How do you find our prices compared to our competitors'? [score of 1-10 where 1 is lowest cost and 10 is the highest cost]

4 / How would you rate your overall experience using us compared to our competitors? [score of 1-10 where 10 is best user experience in the industry and 1 is the worst]

In addition, a fifth question provides the customer with an opportunity to provide open-ended feedback about their overall experience:

5 / What can we do to improve the overall experience we provide you?

Once you have the data and have your own company's Hassle Quotient score, then start comparing your company's score to your competitors'. If you don't want to ask your own customers about each competitor, you can try to complete the information yourself about where you believe your competitors score on each of the questions.

This is not just a one-and-done scoring. Refresh the score and develop historical trends regularly, which results in more customer-centered projects and programs to continue improving the score. Lowest score wins for the company that wants to do it all and dominate its industry.

JIM BRAMLETT BY THE BOOK

Jim Bramlett is a logistics industry veteran with 40-plus years of experience leading companies and specializing in the development of new products and services. Bramlett has founded multiple companies and been on the leading edge of new logistics processes and technologies and focusing on competitive advantage and differentiation.

Over his career, Bramlett has worked for both Fortune 500 companies as well as smaller family-owned enterprises, where he picked up certain traits and characteristics of companies that not only are great companies, but also have come to be dominant in their market space.

His book, *The Unconventional Thinking of Dominant Companies: The New Formula for Market Domination*, is available on Amazon.

Project Logistics: Taming the Details

Whether they involve moving endangered animals or perishable delicacies, special projects demand teams that know how to plan thoroughly, collaborate with multiple partners, and prepare for every eventuality.

By Tamara Chapman

Need to relocate an endangered animal, transport a tuba or two to Tokyo, or ship a delectable frozen product to the hottest of hot spots? Chances are, a special projects team knows just how to make it happen. Here's a look at how, in today's turbo-charged global marketplace, handling the unexpected, the unusual, and the unwieldy are all in a day's work.

It Takes a Village—and a Vet—to Move Endangered Bears

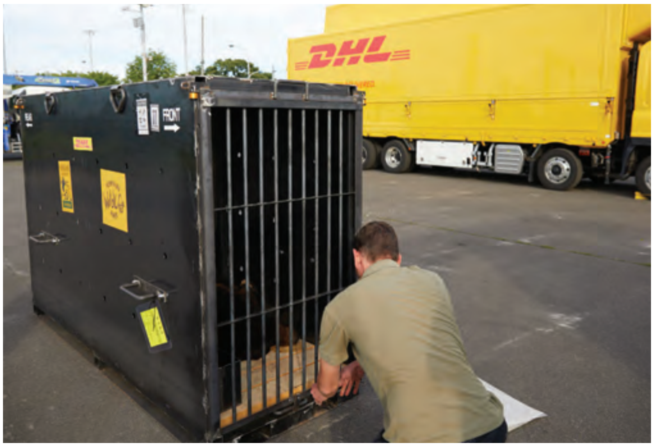
Ionut Mares knows a lot about the happiness of bears, particularly Asia's endangered Ussuri brown bear, which much of the world knows as a black grizzly. As head of airfreight for DHL Global Forwarding's operations in Japan, Mares understands just how these hirsute critters like to travel and just how to keep them comfy.

That's because DHL recently was trusted to move four bears—Riku, Kai, Hanako, and Amu—from Hokkaido, Japan, to the United Kingdom's Yorkshire Wildlife Park (YWP), a pioneer in endangered species welfare. With a mere 10,000 of the bears left in Japan, and with their fate threatened by habitat loss and poaching, the move put the bears at the center of conservation efforts.

"Our DHL Global Forwarding team in Japan spent more than three months properly planning the project until its very last detail," says Mares. "The planning behind the move included areas such as cargo handling, road routing, truck loading, and operational planning."

In the final month leading up to the move, the careful coordination among various stakeholders accelerated to as many as two conference calls every week with DHL Global Forwarding; the Ainu Culture Museum, where the bears were living; YWP; local governments; and even animal welfare associations.

Crates holding the endangered Ussuri brown bears were built with sturdy materials and reinforced with a solid metal frame to hold their weight and provide space for them to lie and turn around comfortably.



To ensure the bears were comfortable throughout the trip, DHL provided purpose-built crates that could fit into the aircraft.

Coordination between the trucking teams and airfreight teams in Japan and the United Kingdom required additional calls and meetings. Once animal-handling experts were added to the mix, the need for clear communications intensified.

Long Day's Journey

When it finally came time to ship the bears, each leg of their long journey was calibrated from minute to minute, with industry partners making special arrangements along the way to accommodate the animals. "The operation started around 3:30 a.m. at Ainu Museum Hokkaido on August 2, 2018," Mares recalls. The bears left the museum in a 10-ton temperature-controlled truck, headed to the New Chitose Airport to board a Tokyo-bound plane.

"Long journeys can be very disorientating for the bears," Mares explains. "This meant that the temperature had to be set just right for the brown bears, which were living in the cooler Hokkaido area as compared to the city.

"Thus, we had on hand our Tokyo Airfreight Life Science and Pharma team, who are specialists in temperature mapping, to support the move and ensure that the temperature within the truck was kept between 2 and 8 degrees Celsius for the bears' comfort."

DHL Global Forwarding worked closely with Yorkshire Wildlife Park to plan and orchestrate the complex voyage, which included optimizing and customizing transportation routes and modes.

Their flight accommodations were just as well considered. "Each bear was placed in a freight-safe enclosure specially constructed for them in compliance with the International Air Transport Association's regulations for shipment of live animals," Mares explains. "The crates were built with sturdy materials and reinforced with a solid metal frame to hold the weight of the 550 kilogram (1,213 pound) bears and provided space for them to lie comfortably and turn around when standing.

"We also took special care to provide ventilation openings at all levels, so that the bears could breathe easily when they were standing or lying down," he adds.

A veterinarian and an animal handler accompanied the bears, monitoring their condition throughout the various departures and arrivals.

"At the cargo bays, the bears were given ice packs to lower ambient temperatures as they waited to be loaded onto the planes," Mares says. "Besides being kept cool with a constant spray of fine mist from big fans, they were provided with drinking water and received juicy watermelons as treats."

Throughout the journey, a veterinarian and an animal handler accompanied the bears, cajoling the creatures into their crates and monitoring their condition throughout the various departures and arrivals.

"Prior to the trip," Mares says, "the vet and the handler consulted with a professor from Hokkaido University and a doctor from a zoo to double-check on the best possible conditions and requirements. They were also responsible for checking on the bears' condition at the New Chitose, Haneda, and Heathrow airports."

The bears, ranging from 17 to 27 years of age, landed at Heathrow Airport at around 6:30 a.m. on August 3. There, thanks to scrupulous preparation beforehand, they sailed through Customs and were handed over to the Yorkshire Wildlife Park for the final miles of their voyage.

Say Cheese: An Irish Treat Travels to Bahrain

It takes a lot more than luck to keep the Irish diaspora from getting homesick. Wherever they go in the world, the Irish want their "pint of Gat" (slang for Guinness), their rashers (that curious cross between bacon and ham), and their puddings of various descriptions.

Transporting Irish cheeses to hot and humid Bahrain required fast delivery and consistent container temperatures.

That's especially true for the growing Irish expatriate community in perpetually sunny Bahrain. That community is now so sizable that it orders goodies from the Emerald Isle by the ton. But not all of these delicacies are easy to deliver.

Take Irish cheddar—treasured for its compatibility with dark beers and its suitability for fondues. For all its easygoing charm, it's a fussy diva when it comes to traveling.

Just ask Colin Wells, the global head of industry vertical perishables at global air and ocean freight forwarder Panalpina. In spring 2018, Panalpina was tasked with completing four June deliveries of young cheddar to the Persian Gulf, where temperatures that time of year flirt with the 100-degree mark. Those four shipments added up to about 64 tons of the dairy product–the same weight as 10 fully grown African elephants.

Moving 10 pachyderms might well be easier, if only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An important logistics challenge when moving cheese is maintaining the right temperature during transportation. Deviations can reduce shelf life, or even render the product unfit for sale.

A last-minute switch from a freighter to a passenger plane could have had calamitous results.

because, when it comes to transporting cheddar, "speed is of the utmost importance," Wells says.

"Cheddar is a hard cheese that does not support listeria monocytogenes growth, which causes it to gradually decompose at all temperatures," Wells explains. Decomposition is accelerated when temperatures fluctuate.

"Maintaining the right temperature during transport is essential for perishables," he says. "Unwanted temperature deviations result in reduced shelf life and, in extreme cases, in completely damaged products that are not fit for sale."

Roughly 20 percent of perishables go to waste between harvest and delivery to the point of sale, Wells adds.

Need for Speed

With no time to squander, Panalpina picked up the frozen cheese at the producer's facility in Ireland and then transferred it via multiple refrigerated trucks to London. At the airport, Panalpina teams worked briskly through the night to log the delivery, X-ray the cheese—"almost all perishables are X-rayed prior to export," Wells notes—and then load it on to airline pallets, just in time for an early morning six-hour flight to Manama, Bahrain's capital city.

"The biggest challenge was ensuring the product remained frozen and was delivered to the airline in good time," Wells recalls. "We make sure our operations and the partners we work with maintain the cool chain, and in this case we had to ensure the airline was aware that the product was frozen and guaranteed it would fly it on the agreed flight."

The agreed flight was of crucial importance. A last-minute switch from a freighter to a passenger plane could have had calamitous results. "It is imperative that airlines set the hold of the aircraft to the correct product temperature to minimize temperature build-up during flight," Wells explains. "This is obviously easier to achieve with freight operators and not always possible with passenger aircraft, where you typically have a mix of different products in the hold."

With the delivery having proceeded so smoothly, Panalpina expects to continue supplying Irish cheddar—by the ton—to Bahrain. No wonder Irish eyes are smiling.

Prelude to a Whirlwind Tour

Some special logistics ventures require their own soundtrack—complete with a few drum rolls and a rousing rondo.

Take the case of a recent cargo-partner project to transport an orchestra's worth of musical instruments—from the brass extroverts to the shy woodwinds—from Vienna to Osaka for the beginning of a fast-paced 17-day tour.

PHOTO: Esther Horvath/cargo-partner

To move all the orchestra's instruments, as well as the corresponding special equipment, a renowned concert tour organizer turned to specialized transportation provider cargo-partner.

Based in Austria and providing a full range of logistics services, cargo-partner is no stranger to challenging airfreight projects, says Christina Kalløkken, the firm's director of corporate communications and marketing. But this one came with extra challenges. Given the limited time between a curtain drop at home and the orchestra's first curtain rise in Japan, everything had to happen to a pulsing beat.

"The orchestra had a performance on the day the cargo was due to arrive, so every hour the plane might have been delayed would have been disastrous," Kalløkken recalls. "We booked the flight via emergency service to make sure that the plane would be in Osaka on time.

"At the same time, we created a schedule to ensure that


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A fluctuating tour schedule made it difficult to nail down a return location and date for all the instruments, so cargo-partner secured the necessary cargo space with several airlines well in advance.

PHOTO: Esther Horvath/cargo-partner

all involved parties—cargo-partner, our client, the airline, the Vienna International Airport Security Services, and Vienna Airport—would be in the right place at the right time," she adds. "If one of these people had fallen through, we could have missed the deadline."

Scheduling for the return flight was just as hair-raising. With the tour schedule in flux, it was difficult to determine a return location and date for all the instruments. To address this uncertainty, cargo-partner secured the necessary cargo space with several airlines well in advance.

Once the final schedule for the concert series was finalized, the cargo-partner team sprang into action. After the last concert in Sapporo, the instruments were packed and loaded on a direct flight home from Sapporo's New Chitose airport. And just in the nick of time. The instruments were needed back in the City of Music just two days later.

Tuning the Plan

Scheduling was not the only challenge. Ensuring safe delivery of the shock- and pressure-sensitive cargo required careful planning and optimal handling. The orchestra and tour promoter took care of packaging the individual instruments in transport boxes. They also handled the transport of the packaged instruments to cargo-partner's office at Vienna Airport, with cargo-partner coordinating the trucking schedules.

Once the instruments arrived at the airport, cargo-partner took it from there, managing a full array of details. "During the preparation phase, we had to coordinate with the freight department of Vienna Airport to figure out the best way to stack the boxes on the pallets," Kalløkken says. "The client informed us of the number and dimensions of the packages beforehand, and we designed the loading plan in close cooperation with the client.

Pitch Perfect Delivery

"Based on this calculation, the airport coordinated the loading of the boxes onto PMC pallets," she adds. "We were there along with an airline employee to oversee the loading. At first, we ended up with one crate left over, so we had to unload and repack to make everything fit onto one pallet. All in all, it took about three hours to load everything on the pallet."

Weighing in at 7,679 kilograms, or roughly 16,929 U.S. pounds, the shipment was distributed over five PMC containers and one AKE container. In total, the shipment consisted of 63 packing units of various shapes.

The cargo-partner team also had to arrange screening by the airport's in-demand sniffer dogs. "For this, we had to place a separate order with the Vienna International Airport Security Services to make sure that the dogs could be there at the time of unloading," Kalløkken says.

By the time the orchestra had returned to Vienna, the air cargo team was ready to take its final bow. And now, should the orchestra opt to tour again, the logistics whizzes at cargo-partner are up for an encore. ■

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- Sale price: TBD

KINSTON, HIGHWAY 70 INDUSTRIAL PARK:

- 34 acres, Smart Sites qualified
- US 70 (0.07 mi)
- On-site rail: Norfolk Southern
- Sale price: $22,500 per acre

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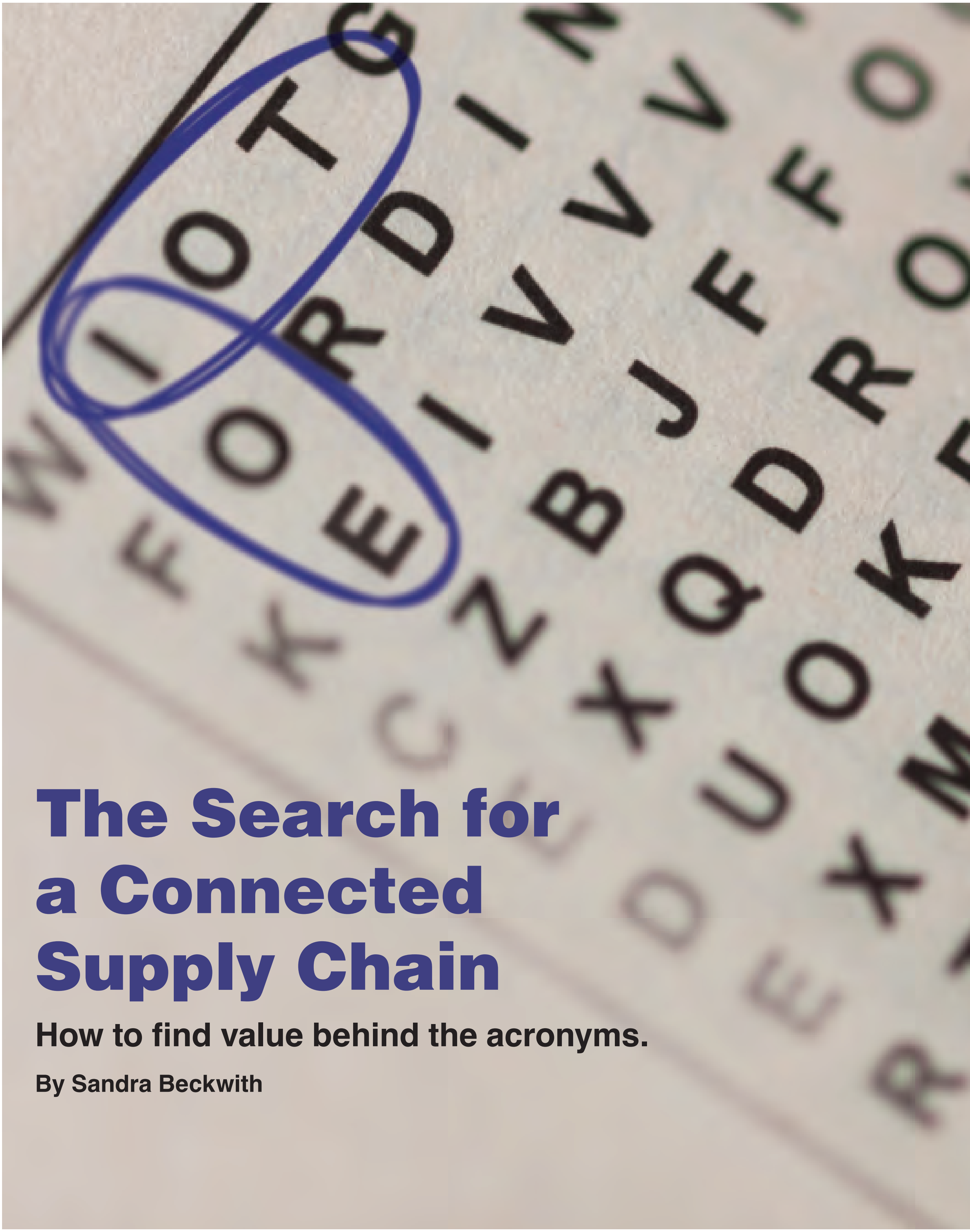


The Search for a Connected Supply Chain

How to find value behind the acronyms.

By Sandra Beckwith

An amusing Progressive Insurance TV commercial features a teenager barking commands into his smartphone.

"Computer: order pizza."

"Fridge: weather."

"Trash can: turn on the TV."

Many think of this as the Internet of Things (IoT). But, "It is not connecting everyday objects like toasters and refrigerators to the internet," writes Kevin Ashton, the man credited with coining the phrase, in *Making Sense of IoT: How the Internet of Things Became Humanity's Nervous System*. "Activating a toaster from the internet has little value: You still have to walk over and put in the bread."

Instead, Ashton says, IoT is "sensors connected to the internet, behaving in an internet-like way by making open, ad hoc connections, sharing data freely, and allowing unexpected applications, so computers can understand the world around them and become humanity's nervous system."

A more simple definition comes from Pete DeNagy, president of Texas-based Internet of Things America, a company that brings IoT solutions to rural areas. "IoT is the ability to connect a device such as a cell phone, wire sensor, airplane, or car to another end point device—another phone or a data center," he says. "It's not mystical, and it has been around for 30 or 40 years."

What we refer to as IoT today is the same thing as yesterday's internet of everything (IoE), says Atul Mahamuni, vice president of IoT applications at software company Oracle in Northern California. Mahamuni, who worked at Cisco when that company originated the phrase, says that IoE was defined then as having four pillars:

1. People. For example, employees monitoring machinery or consumers wearing an activity tracker like a Fitbit.

2. Data. Devices typically gather data and stream it over the internet to a central source, where it is analyzed and processed.

3. Things. Physical items such as sensors and consumer devices that are connected to the internet and each other.

4. Processes. Companies analyze the data from connected devices to change processes.

In earlier years, IoT was often seen as machine-to-machine communication. That has changed, however. "What was IoE is now IoT," Mahamuni says. "The term IoE is obsolete."

Today, IoT is widespread in the supply chain. Eighty-five percent of businesses responding to a 2017 Aruba survey said they plan to implement IoT by 2019.

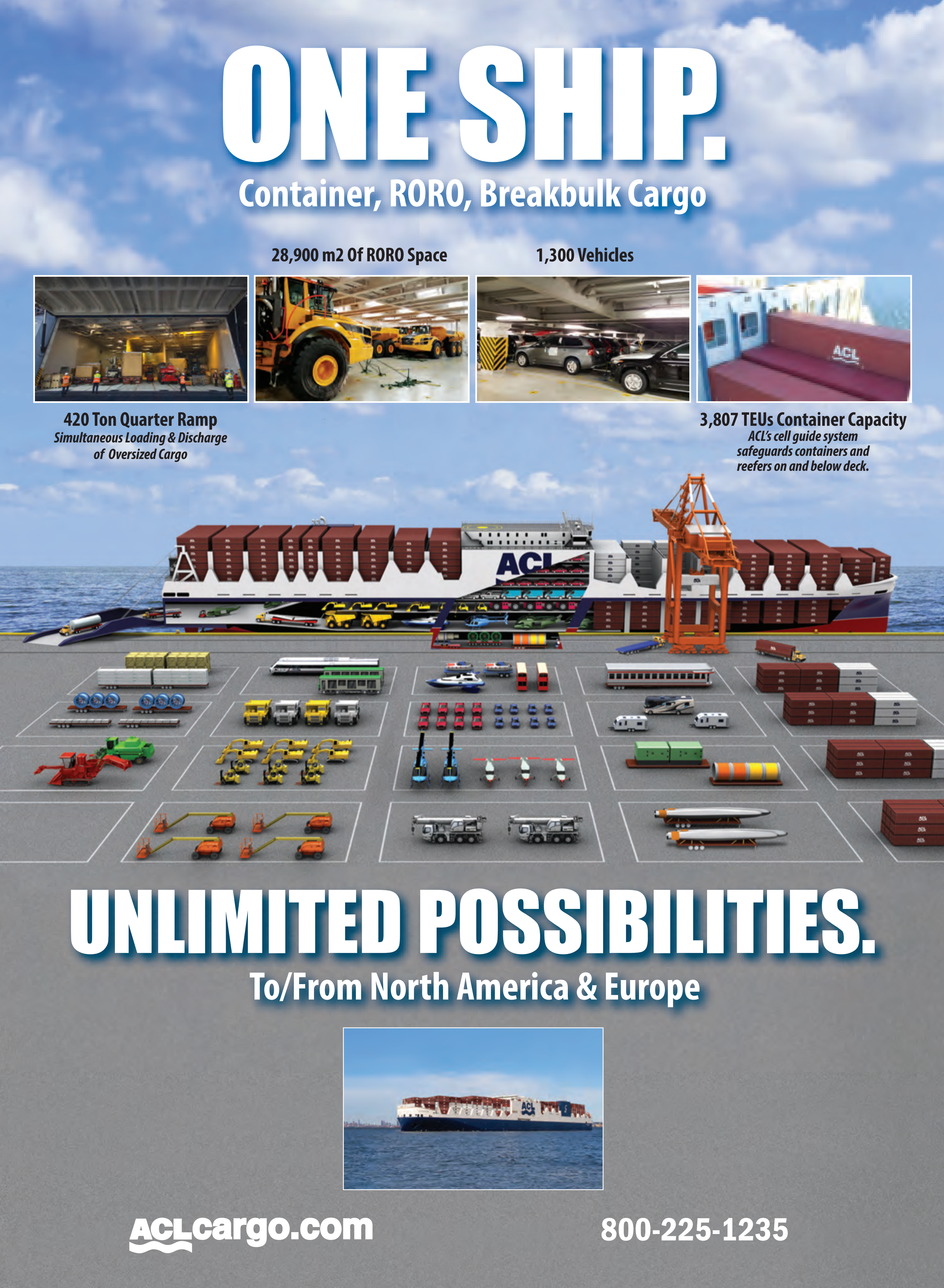
While now most entrenched in transportation and logistics to track, monitor, and locate goods, IoT is deployed in

Acronym Hunt

Here are some common tech-related acronyms you'll hear in meetings and throughout the distribution center.

AI .... Artificial Intelligence
API .... Application Program Interface
DDSN .... Demand-driven Supply Network
EDI .... Electronic Data Interchange
ERP .... Enterprise Resource Planning
IBM .... Integrated Business Management
IIoT .... Industrial Internet of Things
IoT .... Internet of Things
IoE .... Internet of Everything
IoL .... Internet of Logistics
KPI .... Key Performance Indicator
LIDD .... Logistics Intelligence Distribution Design
MTM .... Machine to Machine
RFID .... Radio Frequency Identification
SKU .... Stockkeeping Unit
OMS .... Order Management System
TMS .... Transportation Management System
WMS .... Warehouse Management System
VR/AR ..... Virtual Reality/ Augmented Reality

IoT-based manufacturing execution systems offered by software firm 42Q provide real-time visibility, process and quality control, and data collection and analysis across operations.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420 Ton Quarter Ramp
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supply chain applications that range from monitoring livestock health and fertility to eliminating unnecessary trips to postal boxes in rural locations by using smart devices to communicate whether there's any outgoing mail to pick up.

"The IoT goal for any organization's supply chain is to increase efficiency, productivity, and transparency," says Ahmed Banafa, engineering professor at San Jose State University. "This saves money and reduces human error."

Produce Ripe for IoT

Produce is a category that's ripe for IoT. While the technology has been used to monitor irrigation, fertilizer, and weeds for some time, it hasn't been used post-harvest until recently. Today, IoT allows growers, carriers, and retailers to better track produce shelf life from the moment it's picked.

For example, Zest Labs provides technology that helps reduce up to 40 percent of food waste annually at the retail and consumer level.

"Many variables in agriculture—the temperature in the field when produce is picked, how long and in what temperature pallets sit while they're being loaded—have an impact on shelf life," says Kevin Payne, Zest Lab's vice president of marketing.

The California company's process for managing shelf life starts with analyzing the crop's "freshness capacity" in the field, then uses sensors in the pallets to monitor product temperature from field to store. Its data analytics help retailers put goods that will expire sooner on store shelves first while holding back those that will last longer—or sending them to a farther destination.

On the manufacturing side, ShelfAware, a new division of O-Ring Sales & Service, a Kansas industrial parts distribution company, uses its homegrown IoT system to provide customers with improved vendor managed inventory (VMI) services.

The family-owned business's RFID-powered intelligent supply chain platform saves clients money while it solves ShelfAware's biggest VMI problem. "I was trying to eliminate the person in the truck driving off-site to check inventory quantity and deliver parts," says Andrew Johnson, chief executive officer.

ShelfAware makes packages of components intelligent by applying RFID tags. This turns them into inventory network "nodes" that are tied to database records. As workers pull a package, they scan it at an RFID-enabled station connected to the database. "We know exactly what our customers consume and when," says Johnson.

His company no longer has to be on site to determine stock levels, and customers don't have to tie up capital in excess inventory.

At Sanmina Corporation, an electronic, optical, and mechanical products manufacturer, an IoT-based

Packages of parts provided by O-Ring Sales & Service Inc. to customers participating in its vendor managed inventory program include RFID-enabled tags provided by subsidiary ShelfAware LLC. Workers scan each label after removing products from inventory, which updates the company's inventory database.

IoT Finds the Thread

To check how many spindles were operating on an industrial thread and yarn spinning machine at one time, Service Thread relied on manual inspections that were time-consuming and not always accurate.

When the leading American manufacturer of commercial thread and yarn decided to automate that in-person inspection of 3,300 spindles spread across 115,000 square feet of floor space, it knew that the right combination of technology and hardware could make it possible.

Enter the Internet of Things.

Service Thread's consultant, Logical Advantage, worked with Particle's Photon hardware and cloud platform to create a custom-built IoT solution. As a result, the manufacturer was able to dramatically reduce operating expenses and make better-informed decisions.

More specifically, the North Carolina company:

- Cut more than 500 man-hours per year by replacing manual inspection with real-time monitoring.
- Discovered that manual inspection analyses were off by 15 percent.
- Reduced per-spindle operating costs 50 percent.
- Saved $117,000 in reduced maintenance overtime and overhead costs.

IoT helped the company automate the information-gathering process in a way that saved time, labor, and money.

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IoT applications in rail freight range from traditional tracking to more cutting-edge information about equipment health and track and infrastructure condition. In the future, IoT and high-accuracy GPS are expected to take visibility to higher levels.

manufacturing execution system developed by subsidiary 42Q provides real-time manufacturing visibility, process and quality control, and data collection and analysis across its operations. It also provides access to certain information at specific suppliers.

"Factories that can't get parts on time from suppliers have to shut down. They need greater confidence that they can get those parts," says Gelston Howell, senior vice president at California-based 42Q. "This system provides that."

Managing the Risks

IoT is not all rewards without risks, though. Advisors at insurance company Travelers warn clients about workplace safety, cyber sabotage, and property damage.

"When equipment is connected to a bigger network, a person with bad intentions who gains access could change the equipment to override tolerances and tamper with sensing mechanisms," says Erika Melander, manufacturing industry lead at Travelers.

In addition to managing those risks, experts advise companies exploring IoT to start at the right place.

"Focus on a business problem or opportunity—that's where you can leverage IoT," says Chuck Hieronymi, director of business solutions at Railinc Corporation, the Association of American Railroads subsidiary that provides data, analytics, and messaging services for the rail and transportation markets. "Companies enter a danger zone when they implement IoT for the sake of implementing it. Start with your business priorities."

The supply chain of the future that leverages IoT properly will be one where less capital is tied up in goods because companies will be better able to manage fluctuation and demand.

Don't use a pilot project approach. "Start with small installations that can scale instead," advises DeNagy. "Drive the return on investment, then expand the project. If you don't get the ROI you need, try another project."

"Identify a situation where there's a problem because you don't have data you want," adds Dan Jamieson, general manager of San Francisco's Particle, an Internet of Things platform. "You want to collect data so you can make better decisions in real time."

The supply chain of the future that leverages IoT properly will be one where less capital is tied up in goods because companies will be better able to manage fluctuation and demand.

"The better the information we have about the demand, the better able we are to pull capital out of the supply chain and redeploy it into higher leveraged areas such as research and development or marketing," Jamieson says.

Hieronymi envisions a better-connected supply chain. "There will be more collaboration, integration, and intelligent devices capturing data that has never been gathered before," he says.

While Banafa is enthusiastic about a future he predicts will see businesses using the Internet of Things as a service, he cautions organizations to build customer trust. "The three necessary pillars for customer trust are security, safety, and privacy," he says. "Without them, there's a problem."

That applies to the trash can turning on the TV, too. ■

International Intermodal:

Containers on the Move

As container volumes rise, shippers hop on board with new IT solutions to contend with chassis and driver shortages.

by Merrill Douglas

Given the recent growth in container traffic, shippers and their service partners seek new technology and innovations to keep intermodal containers moving smoothly and cost-efficiently.

The challenge appears daunting when you consider these numbers: More than 2.4 million 20- and 40-foot containers flowed through North American ports in the third quarter of 2018. International intermodal volumes for July through September 2018, compared with the same period in 2017, increased by 4.4 percent, according to the Intermodal Association of North America. That followed a year-on-year gain of 4.8 percent in the second quarter of 2018, and 7 percent in the first quarter.

That expansion is good news for the economy. But lively intermodal traffic also strains the capacity of transportation networks to get all those boxes where they need to go. Here's how companies and technology are stepping up to meet these new challenges.

One indication of the strain the increase in traffic volume creates is the ongoing chassis shortage. A chassis is the equipment a shipping container rides on as it travels over the road. When a container ship unloads at a port, a shortage of chassis to take each box to a rail terminal or road delays the flow of goods.


PHOTO: Milestone Chassis

Larger shipment volumes, port congestion, and a large pool of broken chassis are some factors contributing to a chassis capacity shortage.

Why a Chassis Shortage?

Drayage carriers can't always find enough chassis to move customers' freight for three reasons. One stems from the fact that over the past 10 years, ocean carriers—which, in the past, used to own the chassis—have been selling off that equipment to major leasing companies.

The chassis owned by the leasing companies tend to be old—about 18 years on average. "Obviously, older equipment needs more maintenance and repair," says Dave Manning, president of Nashville-based drayage company TCW. And, of course, a chassis that's in the shop isn't available for use.

A second reason for the shortage is that even when there's enough total equipment to meet current needs, supply and demand may suffer from a geographical mismatch, and current pricing models don't create incentives for repositioning empty equipment.

The trend toward bigger container ships exacerbates the problem. "Now two huge vessels are calling the port, dumping large volumes at one time," says Doug Hoehn, executive vice president at Milestone Chassis, a leasing company in St. Charles, Missouri. "Two days later, a different vessel calls at a different terminal, and the chassis are dislocated."

In late 2018, the trade war between the United States and China put a third strain on chassis capacity. "Many importers pushed to get the product in before the tariff increase," Hoehn says.

To help improve the situation, 12 motor carriers, including TCW, have formed the North American Chassis Pool Cooperative (NACPC), collectively purchasing about 20,000 new chassis and making them available, at cost, to pool members and other trucking companies.

"As a motor carrier, it's in our interest to make sure there's an adequate quantity and a good quality of chassis," Manning says. The new chassis need less maintenance and come with modern features such as LED lights, radial tires, and antilock braking systems.

Milestone Chassis, too, has bought new chassis with modern features, making them available for long-term or daily rental through 40 depots in 24 cities. The company also lists its units on the Chassis Finder network. "Chassis Finder users can book that equipment and take it out for daily or short-term use when they have shortages at the port," Hoehn says.

In California, Milestone provides chassis to a private pool operated by the Harbor Trucking Association, a coalition of drayage carriers at the ports of Los Angeles, Long Beach, and Oakland. "Our facility now operates around the clock, so it provides equipment to the carriers who are making deliveries at night, which is most often when the terminals run out of chassis," Hoehn says.

Among the innovations ensuring safe and reliable transport in closed ocean containers is Odyssey's Load and Roll Pallet.

Drivers Want Better Equipment

Besides keeping more chassis out of the shop and on the road, the arrival of newer equipment could help alleviate another problem plaguing international intermodal transportation—the driver shortage.

Drivers hate the out-of-date, poorly maintained chassis often found in the large chassis pools. "At TCW, drivers have quit because of the quality of the equipment they're expected to move," says Manning. Drivers hauling newer chassis are less likely to lose time and money to breakdowns.

Drayage drivers are also in short supply because of low pay, says Jeff Banton, president of Atlantic Intermodal Services (AIS). Part of IMC Companies, AIS provides drayage in the southeastern U.S., with terminals in nine locations.

Pay has lagged over the past 10 years because shippers have pressured carriers to keep freight costs low. But now that the market has recovered from the 2008 crash, carriers can improve compensation. "AIS has given drivers three increases this year," Banton says. Those raises haven't lured many new drivers into the industry, but better pay helps AIS keep the drivers it has.

For shippers that use rail to move international containers,

Low pay has led to a shortage of drayage drivers. To help retain its current drivers, Atlantic Intermodal Serivces gave them three pay raises in 2018.

Drayage company TCW is among the members of the North America Chassis Pool Cooperative, a joint venture that optimizes the use of equipment to help ease capacity shortages.

one trend helping to offset the shortages is the development of on-dock rail at some marine terminals. "Shippers can avoid that one dray leg if they can work through a pier that has on-dock rail," says Glenn Riggs, senior vice president, corporate strategy at Odyssey Logistics in Danbury, Connecticut.

When a large vessel unloads a great many containers, on-dock rail can reduce congestion in the terminal. "Putting those containers all on a rail service can expedite the movement of containers off the pier and effectively reduce the time the vessel is in port," says John Nikolich, vice president, international transportation management at Odyssey.

Preferred Shippers Preferred

Of course, shippers still need a dray from a rail terminal to the final destination. One strategy for ensuring capacity for that leg is to become a preferred shipper, the kind that turns equipment fast, so the driver isn't left idling while the customer loads or unloads. "There's a lot of activity to make the trucking leg more efficient to gain better use of these limited assets to keep up with demand," Riggs says.

In some regions, a series of weather disasters has also limited intermodal capacity. For example, Banton points to Hurricane Florence, which ravaged the Carolinas in September 2018. The heavy rains bypassed Charleston, where AIS is based, but vessels that were due in port stayed at sea to avoid the storm. "For four or five days, nothing moved," Banton recalls. "All the roads stayed closed for one week."

As conditions eased and ships started to arrive, transportation companies had to work their way through the backlog, unloading containers and explaining to customers why shipments would arrive late.

To offset some of these challenges, shippers and their partners are embracing a variety of IT-based solutions. One newer tool is Port Optimizer, an information portal that GE Transportation piloted at the Port of Los Angeles in 2017 and, in an enhanced version, at the Port of Long Beach in 2018.

Port Optimizer gives stakeholders at the port—shippers, ocean carriers, trucking companies, railroads, terminal operators, and others—a central place to view the information they need about incoming cargo in a standardized format.

Shippers and other stakeholders currently check numerous websites and systems to get data for tracking containers and planning freight movements. This is time-consuming, and it includes "black hole" periods when no information is available. Today's huge container ships may spend four or five days unloading at one terminal.

"During those four or five days, some beneficial cargo owners (BCOs) simply don't know where their cargo is in the process," says Jennifer Schopfer, vice president of GE Transportation Transport Logistics in Atlanta.

Port Optimizer collects data from stakeholders' management systems and presents it through the portal. There, users find information such as vessel location and status, container availability, and chassis inventory.

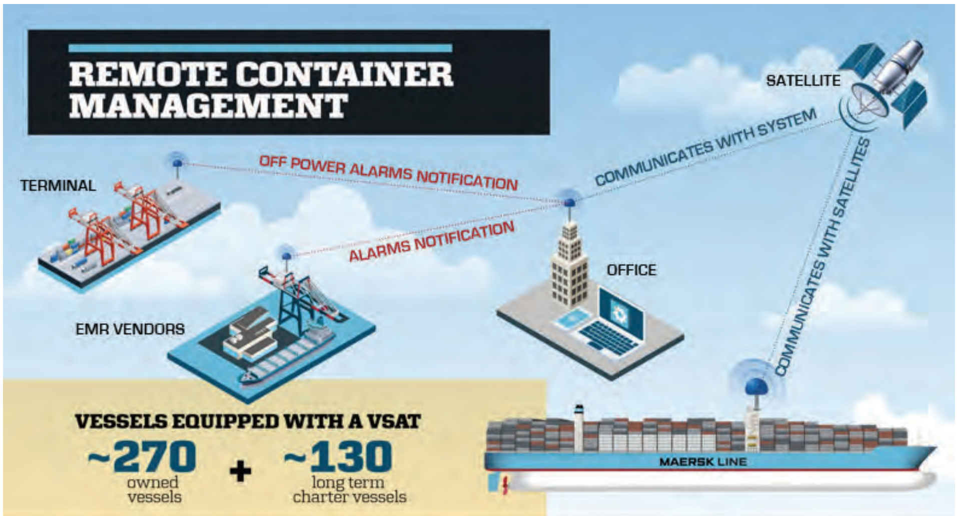
End-to-End Updates

A cargo owner receives updates from the time a container leaves the port of origin through the time it's ready to be picked up at the destination. "This helps from an inventory planning perspective," Schopfer says. During the pilot in Long Beach, companies received data about incoming shipments 14 days earlier, on average, than they had in the past.

Carriers also can receive data on incoming containers, allowing them to plan pickups more effectively. As more BCOs, trucking companies, and terminal operators adopt the system, truckers should be able to get in and out of the terminals faster, Schopfer says.

Advent Intermodal Solutions, in Murray Hill, New Jersey, also offers a portal for data on cargo moving through ocean ports. "EModal is a large port community system that connects hundreds of ports, marine terminals, and depots,

Shipping line Maersk offers a Remote Container Management (RCM) service, which allows fresh, frozen, or pharma shippers to monitor conditions inside the container from end to end. With RCM, both shippers and Maersk have complete access to the reefer's current location, temperature, atmospheric conditions, and power status, at all times globally. If a fix is required, Maersk Line's RCM experts can manage the container, either remotely or through notifications to local technicians.



primarily with truckers, allowing them to get container locations and status updates, make pickup and dropoff appointments, and pay fees, all through one website," says Allen Thomas, chief strategy officer at Advent.

Pro Model

For shippers and third-party logistics (3PL) providers, Advent offers eModalPRO Data Services (EDS), a version of eModal that automates many of its functions. Using a suite of application programming interfaces (APIs), EDS connects to stakeholders' dispatch systems or transportation management systems (TMS), letting them see when and where to expect their cargo and helping them control container movements, without needing to use the portal.

To illustrate, Thomas poses the case of a shipper importing 20 containers from Asia to the Port of Los Angeles. "All we need from the shipper's TMS is notification—via API—of the container IDs and the associated vessel or port," Thomas says. EDS then starts searching the eModal network of terminals to see where that cargo was scheduled to be discharged.

Once the system confirms a delivery at a specific terminal, it continues to share any updates it receives from the terminal, including information on container availability, holds, fees due, and estimated time of arrival. "If the shipper knows which trucker will complete the port dray, we can share all this information with them as well, and even allow for any terminal-mandated appointment to be secured or fee paid," Thomas says.

EDS simplifies the job of monitoring cargo and arranging to move it inland. "Searching for and tracking updates on just a single container, then making an appointment and finally paying a clearance fee to collect the box, could take 20 minutes," Thomas says. EDS speeds that process considerably.

Another visibility service from ocean carrier Maersk lets companies that ship cargo in refrigerated containers monitor their location, along with the temperature, humidity, and oxygen levels in each box.

Shippers who use the Remote Container Management (RCM) web portal can monitor their cargo the entire time it's in the container, including the time when a truck is hauling the container, if Maersk is responsible for that leg. Shippers use the system to receive data on about 80 percent of the refrigerated cargo that Maersk handles, says Anne-Sophie Zerlang Karlsen, head of refrigerated cargo.

"Many customers are able to make better decisions about their supply chains," Zerlang Karlsen says. In the past, for example, a shipper wouldn't learn that a shipment of bananas traveled under incorrect conditions until the end of the trip, when an opened container revealed a load of spoiled fruit.

"RCM alerts shippers if something goes wrong," she says. The shipper can then work with Maersk to mitigate the situation.

RCM also helps cargo owners engage more effectively with vendors. For example, a company that imports lettuce might require its supplier to pre-cool that produce before loading. "With RCM, they are able to detect the cargo's temperature when they put it into the container," she says. "They can see if there's something wrong with how the suppliers handle the cargo, and can use that information to manage the process."

Given recent traffic growth, shippers and their service partners are likely to welcome these kinds of IT innovations, along with other strategies that keep international intermodal containers moving smoothly and cost-efficiently. ■

Putting the Brakes on Transportation Costs

As transportation becomes a larger portion of overall logistics costs, supply chain professionals are taking the wheel to stay on course.

By Karen Kroll

Transportation costs increasingly account for a greater percentage of total logistics costs within many supply chains. Indeed, transportation costs as a percentage of total logistics costs rose from about half in 1980 to almost two-thirds by 2017, according to information from *The Geography of Transport Systems (Fourth Edition)* by Jean-Paul Rodrigue, professor in the Department of Global Studies and Geography at Hofstra University, New York.

The reason for this shift? Lengthening supply chains and accelerating throughput within many warehouses mean raw materials and finished goods spend less time on shelves and more in transit. "Goods spend more time on the move, and thus as part of transportation costs rather than warehousing expenses," Rodrigue says.

On top of these shifts, capacity in many transportation modes has tightened. The truck driver shortage has been among the top three critical issues facing the North American trucking industry for 12 of the past 14 years, finds a recent survey by the American Transportation Research Institute. The shortage reverberates beyond the trucking industry, as many shippers turn to other transport modes to move their goods quickly and efficiently.

But it's not all bad news. There are cost-cutting strategies that can help you focus on more effectively managing your transportation expenses across modes.

Trucking

With a strong economy boosting truck shipment volumes, the term "shipper of choice" has attracted attention.

"Carriers can be selective," says Brad Stewart, president of Rockfarm Supply Chain Solutions. They will choose shippers that are easy to do business with. Indeed, some drivers go online to rate shippers, much like consumers rate restaurants. Here are some ways you can be a good partner and rein in trucking costs:

Agree on what "on time" means. Does it refer to the time when truckers come through the warehouse gate, or the time they arrive at the loading dock? A misunderstanding can mean trucks sit idle.

"If shippers want to lower trucking costs, they have to estimate how long trucks will be sitting in the yard, not making money," says Richard Stewart, Ph.D., professor, transportation and logistics management, University of Wisconsin, Superior. Then they need to minimize that time.

Carriers that face consistent delays at a particular location may decide to avoid it, forcing the shipper out into the market—and higher rates.

Identify carriers in your lane. Most carriers that already have assets on your routes can add stops at your locations more efficiently than a carrier from outside the region.

Leverage subscription services that provide anonymized data on what other companies pay for a particular lane and mode. "With all the data points, you can quickly figure out a reasonable range," says Jonathan Eaton, principal and national supply chain practice leader with accounting and consulting firm Grant Thornton. This information can put you in a better negotiating position.

Partner with your carrier. Because driver retention is so important, many carriers give preference to shippers that become strong partners. Drivers often prefer to work with shippers whose products, people, and routes they've come to know and like.

Less-than-truckload (LTL)

The truck driver shortage also impacts LTL shipments, so the shipper-of-choice concept applies here. Here are tips to help carriers use their time and resources efficiently, resulting in better rates:

When possible, offer multi-bill pickups, or pickups of two or more shipments. "Multi-bill pickups lower an LTL carrier's expenses because a driver picking up multiple shipments at a single shipper reduces pickup costs," Brad Stewart says. These shippers often capture better rates.

Standardize packaging as much as possible. Packages that fit easily on pallets and allow carriers to leverage their racking systems also tend to get more favorable access and pricing because they enable the LTL carrier to efficiently use the space within the trailer.

Review assessorial charges. Some shippers don't take the time to understand these charges, which carriers impose for services other than normal pickup and delivery, such as fuel and storage. Not having a handle on assessorials can backfire, as these fees can range from eight to 15 percent of total LTL costs.

Employ dynamic routing or work with carriers that do. Dynamic routing engines can help LTL routes maintain flexibility, while gaining some of the efficiency of full-truckload routes.

Air

Supply and demand fluctuations tend to drive airfreight costs. So do jet fuel prices, which increased more than 50 percent in 2018. In addition, tightened capacity in the U.S. domestic trucking sector has prompted more shippers to use air freight more frequently: As of February 2018, airfreight rates had risen 14.2 percent year-over-year according to Cargo Facts reports. The following tactics can mitigate these increases:

Work with forwarders. They can leverage their volume to get better rates than most individual shippers can access.

Reduce unnecessary packaging. "Air transportation is all about weight reduction," Richard Stewart says. Cut heavy packaging that isn't needed and you also cut costs.

Plan with as much accuracy as possible. When shippers can strategically plan airfreight volumes, including packaging and lot sizes, they can reduce variability in airfreight spend and schedule shipments on slower days. This both contains costs and ensures more consistent access to capacity.

Check that your shipments move onto the plane quickly. It doesn't make sense to use air freight for time-sensitive goods, only to then have the goods wait for space on a plane. When negotiating with a logistics provider, ask how they secure capacity.

Compare rates for domestic air freight against trucking. Trucking can be speedier and less expensive than air for some shipments, once you account for time spent getting to and from the airport and onto the plane.

Ocean

Over the past few years, many carriers have focused on building "super ships" that can carry tens of thousands of containers. With supply outpacing demand, many shippers enjoy a reasonably strong negotiating position. That said, it's always possible to improve.

Be aware of tighter emissions standards. Starting in 2020, many ocean shippers will have to comply with regulations that reduce the percentage of sulfur in fuel oil from 3.5 to .5 percent. Shippers may see this reflected in higher charges, and should budget accordingly.

Carefully crunch the numbers before shifting production. As of Jan. 1, 2019, more goods coming from China will

That's the Spirits

As 2017 was ending, multiple industry trends—capacity constraints, driver shortages, and truckload and intermodal rates—were driving up transportation costs for beverage distributor Southern Glazer's Wine & Spirits (SGWS). "We needed to get proactive to ensure our loads continued to move uninterrupted," says Bobby Burg, senior vice president of operations and chief supply chain officer.

To mitigate double-digit increases, Burg and his colleagues focused on carrier relationship management by initiating the procurement process earlier and streamlining the number of transportation partners. "We negotiated volume commitments, leveraging our size and scale," he says.

These actions allowed SGWS to build stronger relationships with its transportation partners, who were able to plan asset utilization with greater predictability, reducing their operational expenses and improving return on investment. They also allowed SGWS to secure the capacity it needed to keep inventory moving.

"Our core transportation partners increased on-time performance into our distribution facilities," Burg says. "And we have been able to contain transportation expenditure within our budgeted targets."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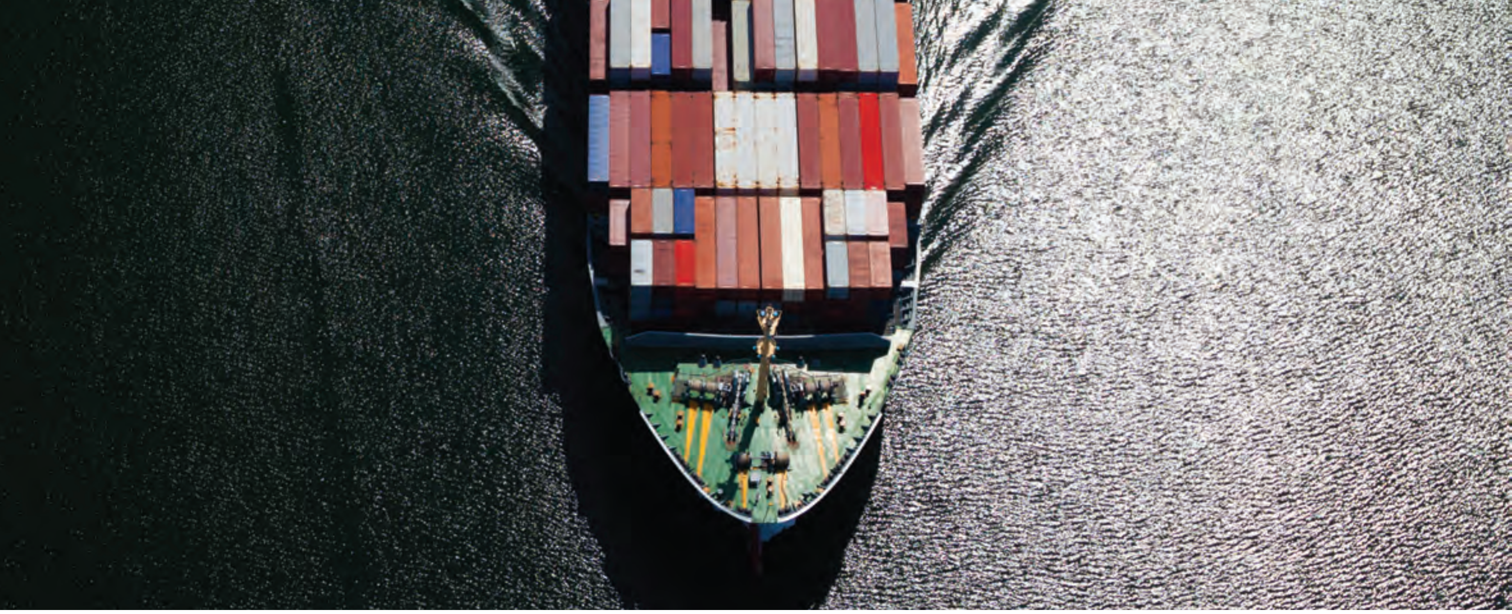

be subject to 25-percent tariffs. Before moving operations to other countries, consider that the traditional shipping lanes out of China are some of the cheapest because they're so heavily traveled. Shifting production to another country may boost shipping costs and eat into any savings on tariffs.

Check that you code imported goods correctly and maintain documentation to avoid costly tariffs and fines.

Across Modes

Some steps can rein in costs no matter the transportation mode.

Invest in systems that provide accurate information. Three things move in transportation: the goods, information, and money. "Especially in international trade, the information is as critical as the cargo itself," says Richard Stewart.

Unreliable information costs money. If, for instance, you don't know that a shipment has been damaged until it reaches its destination, you may end up expediting replacements. The systems don't need lots of bells and whistles, but they should provide accurate, up-to-date information.

Link systems when it makes sense. By connecting transportation management systems (TMS) and other supply chain systems, shippers can gain greater efficiencies. Say a TMS has multiple trucks arriving at a warehouse at various times throughout the day. Link it to a warehouse management system (WMS), which can prioritize picks to minimize staging time and handling.

Look at total cost of ownership, including transportation, when vetting suppliers. If a low-cost supplier can't consistently deliver on time, you'll likely end up expediting more goods, driving up shipping costs. "Your transportation costs can quickly eclipse any savings on the product itself," Eaton says.

Negotiate freight separately. Many companies ask suppliers to quote "total landed cost," including transportation. That allows suppliers to mark up freight rates.

Weigh transportation costs against inventory carrying costs. If reducing transportation costs increases inventory carrying or warehouse operations costs, you may not come out ahead.

Monitor internal compliance. Some shippers do a fantastic job issuing requests for proposals and getting solid transportation rates, only to find some employees are making routing and other decisions that don't follow their guidance. That reduces the savings sought in the first place.

Take an agnostic approach when analyzing transportation data. Look for solutions that best address your needs, no matter the mode or carrier.

Get executive buy-in on becoming a shipper of choice. While many shippers talk about being a shipper of choice, their goals often are thwarted by the ways in which transportation becomes a commoditized item within the organization's budget. Appointing a senior-level champion is key to overcoming this.

Establish long-term, rather than transactional partnerships. A strict focus on cost may mean paying less attention to other key elements such as compliance, visibility, and flexibility. This short-sightedness can have longer-term consequences to the bottom line.

Keeping all these factors in mind will help ensure that your transportation costs stay manageable rather than driving them off the road.

Linking Up

Some shippers save money and streamline processes by linking their systems with their carriers. One example is Dover Global Sourcing (DGS), a function within diversified manufacturer Dover Corporation. DGS manages truckload, LTL, parcel, air, and ocean freight globally.

Due to product mix complexities, global shipping locations, and multiple ERP systems, creating a carrier bid every few years that accurately portrays the requirements of Dover's operating companies by mode "is challenging," says Mike White, transportation category manager.

Going forward, Dover is using a third-party tool that functions as a data repository with direct feeds from suppliers.

While implementation will continue into 2019, the tool has already shortened the typical bid process. And Dover is able "to continually identify and capture savings opportunities," White says.

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A New Day for U.S. Ports

A robust economy and capital investments help buoy record cargo volumes.

By Tom Gresham

The U.S. port industry is booming. A parade of ports have reported record cargo levels for 2018 and point to promising conditions for continued prosperity based on both overall market conditions and their own strategic positioning.

Many port officials attribute 2018's positive numbers largely to a solid economy. Ports also have likely received a temporary boost in recent months due to pending and current tariffs.

"Many of the record cargo levels ports across the country are experiencing of late have to do with a strong economy resulting in increased demand for goods," says Aaron Ellis, public affairs director for the American Association of Port Authorities. "And more recently, with a rush to beat the implementation deadline of new, protective tariffs."

PHOTO: JAXPORT

JAXPORT is Florida's top container port by volume, offering direct service to Asia, Europe, Africa, South America, the Caribbean and other key markets.

Uncertainty on the international stage has led to short-term increases in trade for many ports. But the underlying strength of the retail consumer industry remains the key element of recent good fortunes for ports. “Burgeoning consumer confidence is really the biggest player,” says Dave Kalata, director, national container accounts for JAXPORT in Jacksonville, Florida.

In light of the surge in cargo levels, officials at some of the country’s busiest ports share what is working for their facilities and the trends that are driving the industry.

Ports to Watch

Some ports thriving in the current marketplace illustrate what’s working in the industry as a whole.

The Port of Long Beach finished the 2018 fiscal year having handled more than 8 million twenty-foot equivalent units (TEUs), representing a 10.7 percent increase over the previous year and marking a new port record.

Seventy percent of imports that pass through the port originate in China, and the port’s status as a gateway to the Asian market, along with its emphasis on customer service and rail connectivity, is key to its success, notes Mario Cordero, executive director of the Port of Long Beach.

In September 2018, the South Carolina Ports Authority reported 13 percent fiscal year-to-date growth in TEUs handled at the Port of Charleston through August 2018. The port, one of a host of southern ports thriving in the current climate, had the highest monthly container volume in its history in July 2018.

A variety of components contributes to the port’s swelling volumes. “The upsizing of vessels on the weekly services calling SC Ports has been a major driver of increased volumes, along with manufacturing (exports) and population (imports) growth,” says Kelsi Childress, external affairs coordinator for the South Carolina Ports Authority. “The automotive industry, including import parts, components, tires, and export finished vehicles; export plastics from the Gulf; and agriculture products from the Midwest are areas of particular strength.”

Florida ports are embracing the opportunities that come with their proximity to international partners. Trade with Mexico, which showed a 12.2-percent increase in cargo volume in 2017, has been a boon for many southern ports.

JAXPORT set a container volume record for the fiscal year ending Sept. 30, 2018—the third consecutive year the port has set a container volume record. The port moved nearly 1.3 million containers, a 23-percent increase over fiscal 2017.

“Our advantages are the ease of doing business, lack

(TOP) **Asian trade is JAXPORT’s fastest growing lane, averaging 21 percent growth over the past five years.**

Cargo travels by ship in the Port Everglades channel (*bottom*), located on the southeastern coast of Florida in Broward County (*center*).


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of congestion, fast turn times, depth of labor, and available industrial space," Kalata says.

Port Everglades in Broward County offers more evidence that Florida ports hold an auspicious place in the current cargo climate. While it is too early to confirm, the port estimates it broke a cargo volume record for the most recent fiscal year. "The signs have been overwhelmingly positive," says Jim Pyburn, director of business development for Port Everglades.

Port Everglades handles 15 percent of all U.S. trade with Latin America and is fifth in the country in handling perishables. The port also offers hassle-free access to a rail line, prompting port officials to use the phrase, "There's only one stoplight between us and Los Angeles."

The port opened an intermodal container transport facility in 2014 and has seen strong growth in that area, particularly in the transport of apparel between Latin America and the South Atlantic.

Ambitious Investments

Capital improvements are essential to growth, and thriving ports point to large-scale projects designed to give them the capacity to build on recent successes and continue to increase cargo volumes.

The South Carolina Ports Authority opened its second inland facility, Inland Port Dillon, in April 2018. The facility, which is located 130 miles from the Port of Charleston's container terminals, is rail-served and supports growth of the port's intermodal cargo volumes.

In addition, work finished on the refurbishment of the port's Wando Welch Terminal wharf in July 2018 enables the facility to handle three neo-Panamax ships at the same time. It also began construction on a project to deepen Charleston Harbor to 52 feet. The Port of Charleston also has a new terminal due for completion in 2021 to accommodate growth in its containerized cargo business.

"SC Ports has a bright future," Childress says. "We expect to continue to grow well above the U.S. port market average and look for increased frequency of big ship calls in our harbor."

At the Port of Long Beach, an investment in capital improvement projects ensures the port can continue to accommodate the large ships critical to the industry. A focus for the port is the Middle Harbor Terminal Redevelopment Project. The new facility, which is expected to be completed in 2020, will be able to handle twice as much cargo as the two terminals it replaces, with a predicted annual capacity of 3.3 million TEUs and space for the largest cargo ships in the world.

"We went through the Great Recession of 2008-2009 with some severe impacts on cargo coming through this port, but our commission stayed the course and invested to prepare for the future," Cordero says. "That course is serving us well now."

Officials at JAXPORT and Port Everglades agree that capital improvements are key to current and future success.

"Florida has shown incredible vision when it comes to port growth and has championed ongoing investment during the past decade, which puts us on the map," Kalata says.

"Sustained marketing of Florida internationally as a beneficial destination for cargo has helped, as has recognition by the state's leadership that ports need significant, sustained infrastructure investment to compete on the national stage," he adds.

A core investment at JAXPORT is the ongoing Jacksonville Harbor Deepening Project, which is supported by state and federal funding. The project eventually will provide international carriers with 47 feet of water for travel.

"We will soon be able to accommodate all the containers that should be coming through Jacksonville," Kalata says. "Our leadership understood many years ago that the port would need to be deeper to take advantage of projected growth in container business."

Meanwhile, over the next five years, Port Everglades will manage nearly $1 billion in infrastructure improvements to increase cargo volumes. Expansion projects include adding new cargo berths, installing new Super Post-Panamax container gantry cranes, increasing the lift capacity on

Distribution Centers Make a Difference

The proximity of distribution centers to ports has become essential to sustained success, especially in light of Amazon-driven changes in customer expectations. Site selection for companies using ports in their supply chain can be crucial.

"Customers want their product tomorrow.; they don't want to wait," says Mario Cordero, executive director of the Port of Long Beach.

Southern California's wealth of distribution center space provides an inherent strength for the Port of Long Beach. Supply chain stakeholders know that the infrastructure is in place near the port to make the distribution process relatively straightforward, especially when coupled with rail connectivity.

"One great advantage we have is approximately 1 billion square feet of warehouse facilities in the immediate area," Cordero says. "For a port, that's a huge asset."

JAXPORT has also benefited from distribution centers in the vicinity of the port. "That's what takes us to the next level when it comes to cargo volumes," says Dave Kalata, director, national container accounts for JAXPORT.

"We have seen an incredible increase in retailers—traditional brick-and-mortar shops with online components as well as totally e-commerce concerns," he adds. "Amazon recently opened fulfillment centers in Jacksonville as well."

The Gerald Desmond Replacement Bridge, which is being constructed alongside the current bridge, will span the Port of Long Beach's back channel. Additional traffic lanes will expedite truck traffic to the port, and a higher clearance will accommodate new, larger cargo ships.

existing cranes, and deepening and widening the port's navigation channels.

"We have the capacity, according to our master planners and our own studies, to almost double the volume of container cargo that comes through here on the same footprint," Pyburn says.

Ports in the United States also are taking important steps to adopt new, crucial technological tools that give them fresh capabilities.

"One key strength of the U.S. port industry currently is the wave of supply chain and logistics innovation and adoption, including digitalization of cargo data, which creates resiliency in electrical supplies and telecom networks, and development of new cybersecurity technologies to protect those networks," Ellis says.

Federal Spending and Trade Policy

The federal government will play a central role in the fortunes of ports in the near future due to trade policy and infrastructure spending. Ports officials express varying degrees of concern about the possible ramifications of new tariffs. Because the Port of Long Beach relies heavily on trade with China, officials there are monitoring the tariffs and their impact warily. The initial impact has been insignificant but could grow, Cordero says.

"I have a serious concern because a trade war can lead to a tax or tariff on consumer goods that represent many products that average Americans buy day to day," he says.

At Port Everglades, officials closely watched negotiations surrounding the revision of NAFTA, particularly as it relates to trade with Mexico—a key trading partner for the port. The resolution of NAFTA in a positive manner through the new USMCA deal will allow the port's trade with Mexico to continue to flourish, particularly with the export and import of new vehicles.

"That appears to be a very solid growth opportunity for us," says Steve Cernak, CEO and port director.

Federal government spending on infrastructure also can have a resounding influence on ports. Government spending has been wanting in recent years, but increases appear to be in the works.

"The biggest hurdle today for U.S. ports is the historic underspending by the federal government on transportation infrastructure maintenance and improvement, especially with regard to freight movement and the road, rail, and waterway links with ports," Ellis says. "What excites us is that this trend toward transportation infrastructure underspending may be changing for the better.

"The advocacy efforts by our association and the rest of the transportation industry, as well as other key players in the logistics chain, are making inroads at the highest levels of government to put more emphasis and priority on the needs of moving freight," he says.

If international trade and investments in infrastructure continue to grow, then the future of America's ports looks promising. ■

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Supply Chain Automation Surges

By Sandra Beckwith

Supply chain automation is gaining ground, particularly in warehousing and middle- and last-mile logistics.

While many companies are automating different areas of the supply chain—from purchasing all the way through to last-mile delivery—it's not quite as widespread and prevalent as you might think.

But automation is definitely on the radar, according to APQC, a Houston-based nonprofit that provides members with benchmarking research. In fact, 84 percent of those responding to the organization's *2018 Supply Chain Management Priorities and Challenges* survey say that digitalization will have the biggest impact on the supply chain in the next three years.

Awareness, however, doesn't necessarily translate to action. "A lot of hype and conversation might lead you to believe that digitalization is reality," says Marisa Brown, a senior principal research lead at APQC. "The truth is that it is not yet widespread."

Implementation varies across different parts of the supply chain, including planning, procurement, manufacturing, and logistics. "We're seeing automation mostly in plants and warehouses," says Alberto Oca, a principal in the operations practice at consulting firm A.T. Kearney.

"There has been a shift in where automation is being used," he adds. "It's not just moving through the first mile—it's also in the middle and the last mile."

Moving materials with semi-automated forklifts helps improve productivity while reducing operator fatigue. Crown Equipment's QuickPick remote order picking system allows the operator to move the vehicle forward a pre-determined distance without getting back on the forklift.

Noting the well-established impact of the Amazon effect, shippers in particular are looking to automation to "reduce the touches," Oca says.

Many companies are turning to robotics to reduce those touches and to handle repetitive tasks while improving efficiency.

Repeat Business

"The trend is to drive out human labor that is repetitive," says Steve Sheiner, vice president of business development at Brain Corporation, a company that helps robots navigate. "Efficiency is critical to survival. Companies have to adapt rapidly, and if they're not adopting some form of robotics, they will not be able to compete."

Supply chain automation isn't limited to finding more efficient ways to pick or move products, though. Gathering data for decision-making was—and still is—an early driver of automation.

QiO Technologies provides software that pulls data from legacy systems and other sources and harmonizes it so that it can be used to guide automated processes and improve decision-making. As an example, the company cites the world's largest glass manufacturer, which uses industrial furnaces to produce more than 5,000 products daily.

The temperature of its manufacturing furnace is raised for larger products and lowered for smaller ones. With smart energy meters installed at the line, the manufacturer gets data showing how much energy each furnace consumes throughout the process.

Integrating that information with production schedules from enterprise resource planning systems digitally, rather than manually, allows the fusion of the two sets so that the company can optimize energy per product manufactured.

"Our technology lets that kind of data aggregation happen on a massive scale," says Gary Chandler, consulting services director at the UK-based firm.

In warehousing and shipping, automation serves several purposes that include helping to:

- Reduce the impact of a labor shortage
- Keep labor costs down
- Improve productivity
- Improve efficiency

At Catania Oils, a Massachusetts-based blender and packer of cooking oils, automation streamlines the movement of products from production in the back of the building to distribution in the front. Five overhead conveyors now carry individual boxes of products from the production line to palletizers in the front. Automation has made it possible for the company to recently shift from five palletizers to two.

This approach creates an "accumulation area" where cases queue up for each palletizer. When one conveyor fills up, the system tells the palletizer that line is ready. The palletizer knows that the company is running that product at, for example, 36 cases on a pallet, and automatically changes all its parameters for the products it's now receiving.

"In the past, we had a lot of forklifts moving around constantly from back to front," says Dan Brackett, director of manufacturing and engineering. "Now, products are carried three-fourths of the way to the shipping area on overhead conveyors ."

The new automation has increased each line's yield by 20 percent, he adds.

Autonomous Trucks

Contract logistics provider DHL Supply Chain is testing autonomous pallet trucks that include vision-guided and self-driving options for that long distance from plant to warehouse.

"In some cases, product shuttles through a long tunnel or corridor to the warehouse," says Adrian Kumar, vice president of solutions design in Ohio. "Automating that horizontal travel frees up the pallet truck driver to do more skilled work related to that navigation."

Moving materials with semi-automated forklifts—something Catania plans to consider in the future—helps improve productivity while reducing operator fatigue. With Crown

At Catania Oils, automation streamlines the movement of products from production in the back of the building to distribution in the front.

Equipment's remote order picking system, technology allows the operator to move the vehicle forward a pre-determined distance with the touch of a button without getting back on the forklift. The process keeps the forklift in front of the employee.

"It might not seem like much, but the repetitive task of getting on and off that platform—continually stepping up and down—adds up to thousands of steps every day," says Jim Gaskell, director of global technology business development at the Ohio forklift manufacturer.

Forklift automation improves productivity by 10 to 20 percent, depending on the application. "If the improvement is less than 10 percent, there's usually a process issue that we need to address before the user reaches optimal performance," Gaskell adds.

Tricked Out Trucks

Forklifts are also increasingly equipped with automated mobile devices.

"Forklifts used to include 20-pound computers running with telnet systems connected to the warehouse management system; now they're using tablets," says Marco Nielsen, vice president of managed mobility services at Stratix Corporation in Georgia.

In one case, Stratix was even able to equip a forklift operating in a freezer—less than ideal operating conditions for a mobile device—with an iPad. "We added

How Automation Protects the Supply Chain

When Stockmeier, one of Europe's largest chemical distributors, received an alert from its supply chain risk management provider about a fire at a Rotterdam supplier, it wasted no time taking action.

Even before receiving firsthand information from the supplier, Stockmeier decided to import two strategic products from another provider. The next day, the Rotterdam supplier declared force majeure on all products that the chemical distributor bought from them. In addition, the fire had significant consequences across the entire chemicals supply base, resulting in steep price increases for the next six weeks.

Because it acted immediately after receiving the alert from riskmethods Inc., and before the news was widely publicized, Stockmeier saved $300,000 by purchasing before prices increased.

Riskmethod's sophisticated automated system generated the alert sent to Stockmeier. It digitizes its clients' supply chains, then marries that location and production information with near real-time data on weather, labor strikes, business viability, and any other potential disruptors to the flow of goods or the customers' brands. The software then monitors each supply chain for new and emerging threats and notifies companies of actual or potential issues.

riskmethods' automated risk management system monitors supply chains for new and emerging threats.

The automated monitoring eliminates the need for manual information gathering that has been the norm in risk management.

"One customer had a team of 20 doing this but it simply wasn't sustainable," says Bill DeMartino, general manager of North America for riskmethods. "By automating this piece of their risk management, they were able to free up those people to collaborate with suppliers to innovate and ensure supply continuity."

Sixty-five percent of companies dealt with a serious supply chain disruption in the previous 12 months, according to the Business Continuity Institute Supply Chain Resilience Report 2017. These events are often costly and can be fatal—another source reports that nearly one-third of those that face a major disruption are out of business in two years.

Using automation to protect the supply chain does more than help companies react quicker or reallocate internal resources to other tasks. It can also help reduce insurance costs.

"Many companies buy property, business interruption, and contingent business insurance," DeMartino says. "Insurance companies often provide discounts, higher limits, or lower deductibles depending on the customer's risk management program. Because of our process, some companies can save more money on their insurance than they paid for our solution."

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Automating the Automators

While increased automation can create efficiencies, it can create problems too. One involves managing handheld devices used as part of an automated process or system.

"Many companies don't manage their handhelds at all, relying instead on the honor system," says Kent Savage, CEO of Apex Supply Chain Technologies in Cincinnati. "Others dedicate a full-time employee to this process. Either approach creates a variety of issues, including device hoarding and loss, as well as lower employee productivity, wasted time, and costly replacements."

Apex solves the problem with more automation: smart storage lockers. The cloud-connected units require employees to check out and check in their handhelds and allow them to recharge the devices when in storage.

Process improvements offer a return on investment in an average of one to three months, says Savage, citing four areas that make a difference:

1. **Cost savings:** Better monitoring yields as much as a 40-percent reduction in device replacement costs.
2. **Improved productivity:** With less time spent looking for or recharging devices, employee productivity improves.
3. **Continued device availability:** Because employees have their own locker, workers on each shift are assured there's a fresh device waiting for them.
4. **Better use of manager time:** If devices aren't returned at the end of a shift or need service, managers receive alerts automatically. Less time spent with these issues frees up managers to use their time on other tasks.

When lockers are placed next to the time clock, employees punch in, get their devices, and go straight to work, no longer wasting time looking for a charged device.

a heated pad and mounted the iPad inside it and it worked," Nielsen says.

ShipMonk, a Florida software company that offers third-party logistics services, has automated the picking process with the first e-commerce automated storage and retrieval machine in the United States. Each machine holds 7,000 SKUs and offers distinct advantages in a segment where orders must be picked and shipped quickly.

"Machines are more consistent and accurate than humans and don't call in sick," says Kevin Sides, chief revenue officer.

Automation extends to transportation and delivery, too—just ask any truck driver. The electronic logging device (ELD) mandate that went into effect at the end of 2017 requires drivers to log their hours with a digital device that collects and transmits data.

Tablets have replaced computers on many forklifts.

Automating the Last Mile

Automation is essential for last-mile delivery as well, with software managing logistical algorithms and smartphone apps communicating package pickup and delivery details.

Delaware's DeliveryCircle uses proprietary software to automate the package and driver matching process for deliveries in verticals that include automotive, medical, pharmaceutical, and retail in 19 cities.

"We don't have a lot of operations people because the system keeps an eye on things; we don't have to," says CEO Vijaya Rao. "If our technology was less sophisticated, we would have at least double or triple the number of people in operations."

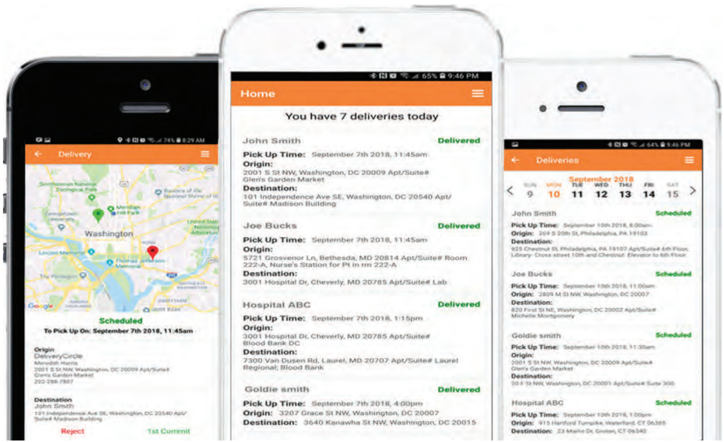
For example, if a pickup is scheduled for noon and it hasn't happened by 12:05 pm, the system automatically triggers a message that there might be a delay.

DeliveryCircle's software knows which drivers are certified to transport goods to and from blood banks, labs, and hospitals; who can deliver pharmaceuticals to hospitals and consumers; and which people drive autos, cargo and mini-vans, or box trucks. The system automatically matches driver certification, vehicle size, and goods to be delivered.

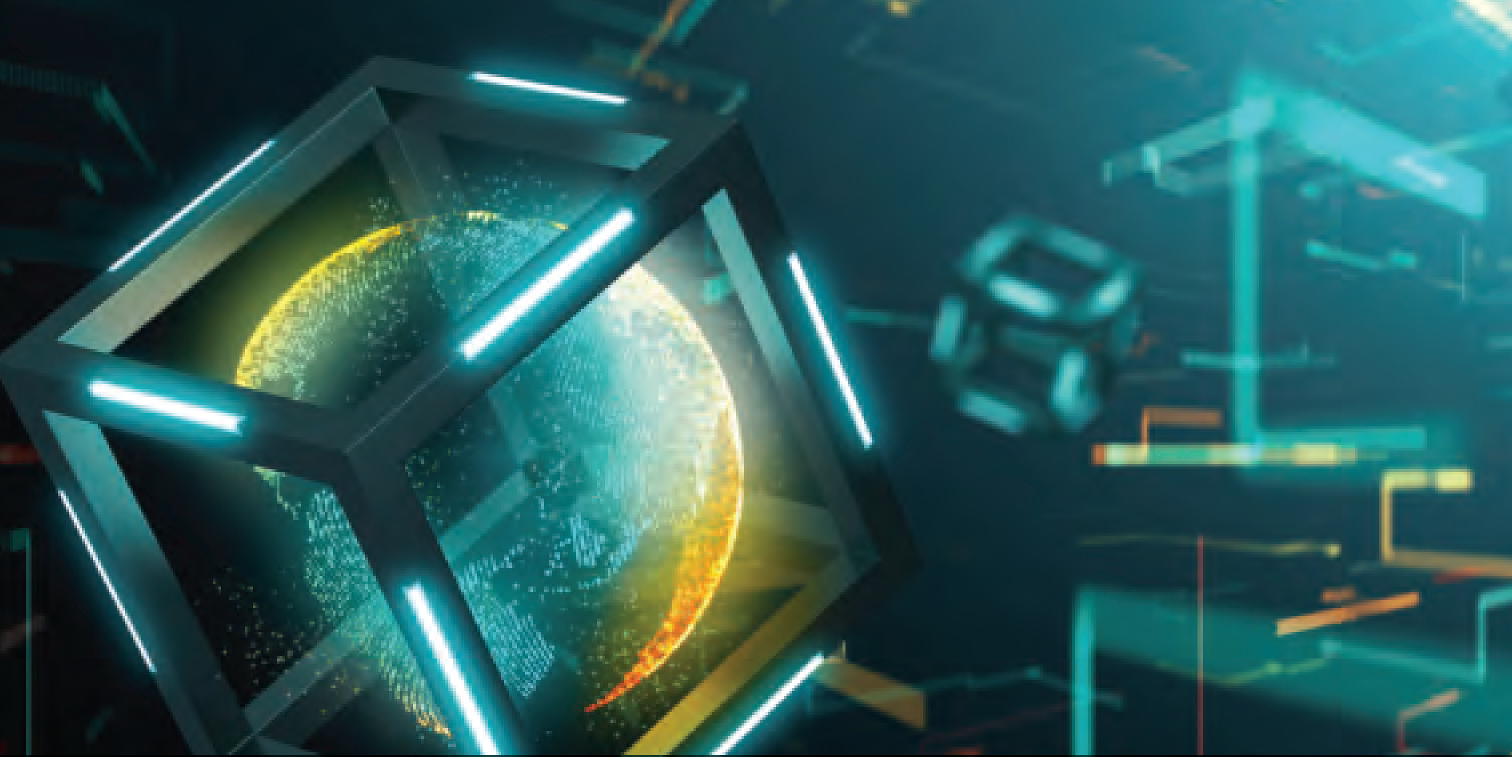
Rao expects future delivery automation to involve tracking chips added to packages to communicate continually without scanning.

Still, as sophisticated as it all sounds, "The vast majority of operations are still relatively conventional in nature," says Kumar.

"There's a lot of different technology out there, but many operations still look the same way they did 20 years ago," he adds. "The difference might be that companies pepper in different innovations here and there." ■



DeliveryCircle uses proprietary software to automate package and driver matching for auto, medical, pharma, and retail deliveries.



Improving Ocean Shipping:

Blockchain Reaction

Waves of hype surround blockchain technology. What are the true implications for the maritime industry?

By Emma James

Blockchain technology is capturing interest across the supply chain, and the maritime industry is no exception. Nine ocean carriers and terminal operators are so interested that they recently formed a consortium to develop the Global Shipping Business Network (GSBN), an open digital platform based on distributed ledger technology.

Participants in the consortium include CMA CGM, COSCO Shipping Lines, Evergreen Marine, OOCL, and Yang Ming as well as terminal operators DP World, Hutchison Ports, PSA International Ltd., and Shanghai International Port.

"The new platform, an ecosystem for the shipping community, will connect all shareholders including ocean carriers, terminal operators, customs authorities, shippers, and logistics providers to realize collaborative innovation and digital transformation in the supply chain," according to a Yang Ming spokesman.

These goals are similar to the expectations expressed by Maersk and Kuehne + Nagel, early adopters of blockchain technology.

In January 2018, A. P. Moller-Maersk and IBM announced plans to pursue blockchain solutions. Then in August 2018, the two companies collaborated to create TradeLens, a blockchain-enabled shipping solution.

Ninety-four organizations are actively involved or have agreed to participate in the TradeLens ecosystem, including 20 port and terminal operators accounting for approximately 234 marine gateways worldwide, Additionally, customs authorities, freight forwarders, and beneficial cargo owners have joined.

Freight forwarder Kuehne + Nagel participates in a blockchain consortium consisting of consultancy Accenture, ocean carrier APL, and shipper AB InBev.

Yang Ming and the four-member Ocean Alliance have teamed up to establish a global blockchain-based open platform to simplify and expedite cargo and data flows.

In its most basic form, blockchain is "shared ledger technology" enabling a single, shared, tamper-proof ledger, according to IBM. Once recorded, transactions cannot be altered. Anticipated benefits include less paper processing, increased transaction time speed, and improved efficiencies.

Although it is often used as a single technology, there are two different types of blockchain: public and private. Some of the most commonly known public blockchains are the cryptocurrency ones used for bitcoin transactions. Because these are completely transparent, participants are concerned about dealing with sensitive information, such as commercial contracts.

Caring About Sharing

Sharing the exact details of contracts and transactions is problematic for freight forwarders, ocean carriers, and shippers. These various stakeholders may collaborate with each other, but not with their competitors. This level of transparency may be an issue with supply chain strategy increasingly becoming a competitive advantage for companies and freight forwarders seeking differentiation in a crowded and fragmented market.

While a consistent wave of ocean carrier consolidation has occurred in the past few years, the remaining players still compete for volume. Empty containers do not generate revenue.

Private blockchains allow users different permission levels, so access can be restricted, and information can be encrypted to adapt to users' needs.

Transporting goods internationally can become complex, both in terms of physical distribution and cross-border data exchange. Documents related to hazardous cargo, invoicing, cargo release, and other required customs information are vital to the actual movement of goods.

One missing or inaccurate form can keep freight from being delivered. Unlike domestic U.S.-based transportation, global shippers cannot immediately contact a provider and have a new truck dispatched within moments or hours to avert the supply chain implications of a missed or delayed delivery.

One reason the maritime industry is embracing blockchain is to "reform document processes of shipping management," says a Yang Ming spokesman. The first prototype of GSBN allows shippers to digitize their documents and proceed to automatically exchange data with relevant supply chain parties. This simplifies the complicated documentation process and expedites the delivery of goods.

The Business Case

"Blockchain might not be able to solve, cure, or save everything as the hype suggests, but there are certainly applications where the business case makes sense," says Adrian Gonzalez, president of Adelante SCM and a supply chain technology analyst. "It makes sense in global trade because of the many different parties, documents, regulations, and financial transactions involved."

How Blockchain is Used in Ocean Freight

Kuehne + Nagel's first blockchain activities date back to 2016, when the concept received board-level support and it began case identification workshops.

"Our approach is to work with customers and business partners on real-world use cases in open and collaborative consortia," says Inge Ole Ottemoller, senior IT consultant and blockchain expert for Kuehne + Nagel. "Using new technologies such as blockchain is an element of business strategy to continuously improve our processes as well as the business model."

Fast forward to 2019, and Kuehne + Nagel states there is much work still to be done to achieve the promise of blockchain technology. "Blockchain has the potential to enable further digitalization of existing processes," Ottemoller notes. "But the technology is still at a very early stage."

"With the experience already gained, the technology used at the present time does not yet have the maturity for productive use in extensive, complex applications," he adds. "In particular, the requirements for maintainability and automated operation are hardly met."

However, some successes have come from its blockchain consortium, which has focused on one central document in ocean freight: the bill of lading. "The consortium already developed a proof-of-concept for an electronic bill of lading use case from export and import to a common blockchain-based ledger," reports Kuehne + Nagel.

This group effort "demonstrated how the application of blockchain for issuing and exchanging bills of lading can unleash huge efficiencies for the industry due to seamless and tamper-proof data integration," says Ottemoller. "The need for printed shipping documents is rendered obsolete."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Maersk also reports benefits from its adoption of blockchain technology, and specifically, the TradeLens application.

The platform has captured more than 154 million shipping events, including arrival times of vessels and container "gate-in," and documents such as customs releases, commercial invoices, and bills of lading. In the past, Electronic Data Interchange (EDI) systems shared some of this data in the supply chain.

The TradeLens platform has already proven to be effective. One example Maersk reports is a 40 percent reduction in transit times to ship packaging materials to a production line, avoiding thousands of dollars in costs.

The GSBN consortium hopes to achieve these types of real-world supply chain enhancements. "We are always willing to try innovative technologies to keep up with the digital transformation of the shipping industry in collaboration with others," says a Yang Ming spokesman.

Ocean carrier Maersk Line and technology company IBM collaborated on TradeLens, a blockchain-enabled shipping solution that brings together various supply chain parties to support information sharing and transparency.

New Kids on the Blockchain

The blockchain "revolution" has also lured new players to the market, such as CargoX, a company that created a neutral, open, independent platform available to ocean carriers and other stakeholders. While other consortiums may be limited in the ability to expand or onboard new carriers, "Our platform solves these issues, as it is based on a neutral, open, public Ethereum blockchain network," notes Stefan Kukman, founder and CEO of CargoX.

Although public, the CargoX platform is secure because the transparency it provides, "only relates to the transparency of time-stamps of certain transactions," Kukman says. "What is being translated is completely invisible, as the content of the documents and data fields is encrypted and secured from unauthorized viewing."

Recently, CargoX customer ShipChain completed a successful blockchain-based pilot shipping initiative with Perdue Farms. During the pilot, ShipChain tracked Perdue fleet data and recorded it in the Ethereum blockchain.

Early adopters such as Kuehne + Nagel remain optimistic about the future of blockchain and the maritime industry. The freight forwarder is using the application in the areas of workflow, trade finance, provenance, and visibility.

The Right Direction

"The development points in the right direction, so it can be assumed that the technology will reach the required level of maturity in the future," says Ottemoller. "Thanks to the project experience already gained, Kuehne + Nagel is in a position to have an educated judgement on the state of play for this new technology."

The many companies adopting blockchain platforms share a common vision of the technology's benefits to the supply chain, and the ocean freight sector specifically. These include:

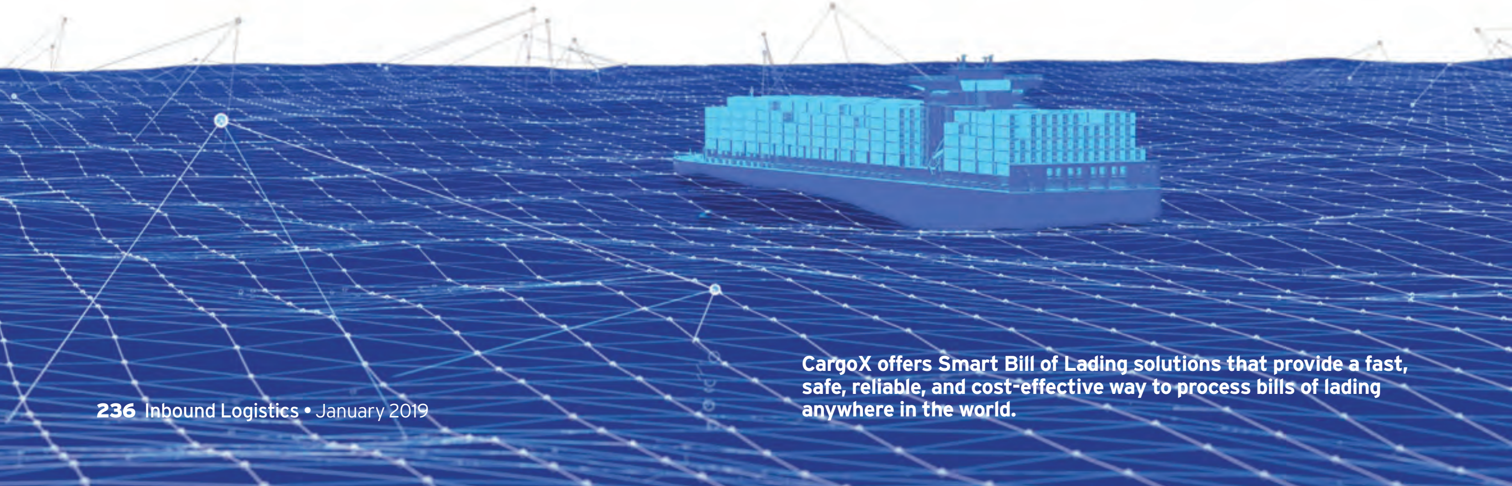
- Reduced paper-based processes
- Reduced waiting time
- Faster transit times
- Transparency across processes and company boundaries

Questions and More Questions

As additional new entities enter the same space with unique platforms, however, reaching these goals may be a challenge for shippers.

With providers ranging from ocean carriers to freight forwarders to software companies offering different options for blockchain platforms and consortiums, how does a shipper that does not want to work with only one provider deal with the challenge of enabling integration and interoperability between those platforms? With multiple groups working to establish global shipping standards, which standards will ultimately benefit shippers most?

Gonzalez also raises another area of potential concern: Can any technology, new or dated, overcome bad data? "It's important to note that blockchain doesn't erase the fact that supply



CargoX offers Smart Bill of Lading solutions that provide a fast, safe, reliable, and cost-effective way to process bills of lading anywhere in the world.

chains still suffer from crappy data," Gonzalez cautions. "It doesn't erase the integration challenge of aggregating, cleansing, and linking together data that is spread out across many different applications.

"Some were built in the 1970s, across many companies and countries, some with limited or no IT capabilities and stored in many different formats, including email and faxes," he adds. "In short, blockchain by itself does not solve the problem of 'garbage in, garbage out' data quality problems, but it is a distributed ledger that is better encrypted and traceable."

Digitalization Agenda

Other issues beyond the scope of blockchain alone need to be resolved to improve efficiency in the ocean freight industry. "Digitalization and blockchain are not synonyms," notes Kukman. "They are tightly connected because the shipping industry is lagging behind in its digital processing.

"But blockchain implementation is just a part of the whole digitalization agenda," he adds. "And digitalization as such is inevitable—it is time that the paper processing machinery is transformed into modern, trustworthy digital solutions."

Whether using a CargoX platform or another application for blockchain, the ocean freight industry must embrace technology to "deal with the problems that arise from the snail's pace of transferring paper documents," Kukman states. Paper documents can be damaged, lost, or even forged or stolen.

"Those ocean carriers that don't embrace digitalization will start losing their market share," predicts Kukman. "Global trade relies on digital data and new services, and this reliance will just get stronger. The carriers that decide to adopt blockchain know what the advantages are."

End customers will have the greatest benefit in knowing where existing documents, transactions and goods are located, as well as whose turn it is to make the next step in the process," Kukman adds.

Additional benefits for end users are likely to be realized in the area of forecasting. "The CargoX platform provides new ways of analyzing past business events to support forecasting loads and volume, identifying throughput bottlenecks, and other issues," Kukman says.

One of the biggest impediments to blockchain and other forms of digitalization is the fact that many companies still rely on paper processes because "that's the way it has always been done." That kind of thinking is what will determine winners from losers in the future because, says Kukman, "We don't ride horses for transportation anymore, do we?" ■

The Blockchain Gang

Nine ocean carriers and terminal operators formed a consortium to develop the GSBN, a platform based on distributed ledger technology.

In November 2018, nine leading ocean carriers and terminal operators agreed to form the Global Shipping Business Network (GSBN), an open digital platform based on distributed ledger technology. The new platform will establish a digital baseline that aims to connect all stakeholders, including carriers, terminal operators, customs agencies, shippers, and logistics service providers to enable collaborative innovation and digital transformation in the supply chain.

The container shipping industry is often characterized by disparate processes that take place across both physical and digital domains. Companies are increasingly looking toward digital technologies to resolve siloed shipment management procedures and disruptive information gaps. The consortium will offer a forum to address these challenges, explore cross-industry opportunities, and empower future innovation and insights.

The consortium's leading members intend to collaboratively develop the platform and establish standards to facilitate the seamless sharing of documents and data across all stages of the shipping lifecycle.

The GSBN will enable the shipping industry to digitally transform and to prepare for innovative supply chains. Based on blockchain technology, the new platform will offer the following benefits:

- **Open and extensible**. A cooperative network enables members to develop applications and connect to other consortium networks to increase the speed of data integration and improve business performance.
- **Transparency and instant validation.** Peer-to-peer networking allows data owners to share immutable records to other shipment stakeholders, enabling them to take quick action regarding critical milestones and to keep cargo moving throughout the supply chain.
- **Digital baseline for standards.** An industry-wide common, trusted, and expansive digital model provides a foundation for highly collaborative initiatives and market intelligence.

Technology company CargoSmart initiated the formation of the blockchain consortium to revolutionize information exchange in the shipping industry. CargoSmart is leveraging its shipping domain knowledge, big data analytics, and expertise in developing software applications to help network participants improve their shipping and logistics operations.

by Karen M. Kroll

U.S.-Mexico Trade: Strong But Shifting

Each year, billions of dollars of goods flow between Mexico and the United States. Trade between the countries shows no signs of slowing, but will recent events alter the flow?

Mexican President Andrés Manuel López Obrador's decision in late 2018 to cancel further construction of the international airport in Mexico City, which had been about one-third complete, carries a price tag of about $5 billion, according to estimates.

The cancellation also adds to the bottlenecks cargo and passenger planes experienced flying into and out of Mexico. The cancellation is "one of the biggest challenges for our industry," said Alexandre de Juniac, director general and chief executive officer of the International Air Transport Association (IATA).

López Obrador had said he supports an alternative plan that includes upgrading the existing airport, as well as a smaller hub in the city of Toluca, west of Mexico City.

Moreover, truck and rail handle the majority of trade between the two countries, says Erik Lee, executive director with the North American Research Partnership, a think tank. As a result, trading partners may not immediately feel the impact of the cancellation.

What is more immediate and significant is the confusion

A cargo ship sits in the Port of Veracruz, which is looking to quadruple its installed capacity by 2030. In 2017, the United States imported more than $314 billion worth of goods from Mexico.

the decision wrought. "There is a good amount of uncertainty regarding how the new government will impact certain sectors of the economy," Lee says.

Uncertainty is a bane of supply chains, many of which cross the border between the United States and Mexico. In 2017, the United States imported more than $314 billion worth of goods from Mexico and exported more than $243 billion to its southern neighbor, according to U.S. Commerce Department information.

For 2018, those numbers were on pace to increase about 10 percent. Mexico was America's third-largest trading partner in 2017 and appeared likely to hold that spot in 2018.

"Many supply chains extend up the I-35 corridor," Lee says, referring to Interstate 35, which extends from Laredo, Texas, on the Mexican border, and travels about 1,600 miles north to Duluth, Minnesota, near the U.S.-Canadian border. Many organizations that work across the U.S.-Mexico border use just-in-time inventory arrangements that are "robust, but delicate," Lee says.

Several other events may also impact trade between the United States and Mexico. One is the recently negotiated USMCA, sometimes referred to as NAFTA 2.0, although it awaits Canada, Mexico, and U.S. ratification. Another is the work underway at many Mexican ports. Even events happening largely in other parts of the world, such as the unsettled relationship between the United States and China, can impact U.S.-Mexico trade.

Before NAFTA

Trade between the two countries actually predates the North American Free Trade Agreement (NAFTA), which took effect in 1994. Starting in the 1960s, many U.S.-based companies shipped components to Mexico, where they were assembled, perhaps in a maquiladora, or a foreign-owned factory in Mexico, at which lower-paid workers assemble imported parts into products for export, says Mauro Guillen, professor of international management and director of The Lauder Institute, University of Pennsylvania.

In late 2018, the leaders of Canada, Mexico, and the United States announced agreement on a trade deal known as the United States-Mexico-Canada Agreement or USMCA. The agreement still needs approval from the countries' legislative bodies. Assuming it's ratified, it will sunset in 16 years, unless it's renewed.

The USMCA is "more a tweak than a radical revamping of the current agreement," says Jonas Gamso, assistant professor with Thunderbird School of Global Management at Arizona State University. It strengthens labor and environmental standards and extends intellectual property protections. It also includes new provisions related to digital trade, which weren't on anybody's radar when NAFTA was negotiated.

Other updates within the USMCA include "simplified processes for the clearance of goods, especially for low-value shipments, and allowing importers to self-file customs entries, as opposed to requiring the use of a customs broker," says Julio Barrionuevo, senior vice president of operations,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Shipping containers for truck and train transport wait at an inland port built by Union Pacific at Santa Teresa, New Mexico. The port sits near the U.S.-Mexico border near El Paso, Texas.

Mexico, Caribbean, and Central America with FedEx Express. In addition, new rules for cross-border data flows will help streamline e-commerce.

Industry Impact

The USMCA includes new rules of origin and wage rules for the auto industry. A higher percentage of automobile components must be produced in Canada, Mexico, or the United States—what's known as regional content value, or RCV—to be tradeable at a tariff-free rate within the three countries. In general, the percentage now is 75 percent to NAFTA's 62.5 percent.

Additionally, workers earning at least $16 per hour must account for at least 30 percent of the work on a car for it to trade tariff-free within USMCA countries. "It's a gift to U.S. labor unions," Guillen says.

Companies likely will comply with the provision by reserving more of their more sophisticated jobs for the United States and Canada, as wages already are higher in the two countries.

The change is unlikely to boost wages in Mexico. Instead, higher Mexican wages typically require companies to establish capital-intensive operations within the country. "To run them, they need highly skilled, local workers who they pay well," Guillen says

In a shift from NAFTA, USMCA will not establish a certificate of origin format that exporters, traders, and importers fill out before their goods can benefit from preferential tariffs, says Emilio Arteaga Vázquez, an associate with Vázquez, Tercero & Zepedo, a specialized trade law firm.

Instead, under USMCA, companies may certify the origin of a product on, for instance, an invoice. Customs authorities can still test to verify the origination, however.

This is the model being used in many new free trade agreements. "Rules such as these will facilitate trade between companies," Vázquez says. One reason is that the countries agreed that they won't reject a certification of origin due to minor errors or discrepancies.

All companies, but particularly manufacturers, should review the USMCA and identify whether the rules of origin applicable to their goods were modified, Vazquez recommends. If the rules were modified, companies may need to seek new suppliers, reshore production of inputs, or prepare to pay a Most Favored Nation (MFN) duty.

Another shift concerns a mechanism within NAFTA that allows investors to bring governments to international arbitration if they introduce laws that could reduce companies' profits. The USMCA largely eliminates that process and moves dispute settlement to the domestic legal systems.

The lack of tribunals increases unpredictability, as governments have freer rein to do what they want and local courts will decide what's acceptable. "This could mean less investment among the three countries," Gamso says.

Impact on Trade and Investment

This change, as well as the sunset clause contained within the USMCA, "is likely to foster some uncertainty in the eyes of foreign investors," Gamso says. That may slow foreign investment in Mexico, which will, in turn, mean fewer Mexican-produced goods heading to the United States.

On the other hand, much of the trade between Mexico and the United States,

including most agriculture and intellectual property, falls under the rules of the World Trade Organization, rather than NAFTA, says Marc Busch, professor of international business diplomacy, government, and business administration at Georgetown University.

"The WTO provides a fundamental backdrop for a rules-based global economy," he says. Businesses benefit from the level playing field it provides.

In contrast, the current U.S. administration tends to adopt a bilateral approach to trade agreements and negotiate with one country at a time, Guillen says. While this may allow the United States to try to get the best possible deal with each country, it also makes the business world overall "more complicated and unequal," he adds.

Of course, any potential changes assume the USMCA is ratified. "It's anyone's guess how it will turn out," Lee says. In the United States, the new Democrats in Congress may vote against it to make a statement against President Trump. However, if their constituents believe the new deal helps them, they may pressure their representatives to support it.

The Global Economy

Events that appear only tangentially related to U.S.-Mexican trade can impact it. One is the wage pressure on Mexico from other countries. After all, Mexico's labor force competes with China and other lower-wage countries.

"Whatever happens in China also impacts U.S.-Mexico trade," Guillen says. When making goods for the U.S. market, Mexico tends to benefit as wages rise in China, as its own wages become relatively less expensive, while it also enjoys the benefit of shorter transportation times.

At the same time, rising Mexican wages can offset this advantage. Between 2014 and 2018, average daily wages in Mexico increased about 19 percent, according to Trading Economics.

Similarly, trade disputes between China and the United States may benefit Mexico, given that many goods flowing between the United States and Mexico aren't subject to tariffs.

"A surprise provision in the USMCA, Article 32.10, requires any USMCA nation to notify the other two members three months before launching free trade talks with a non-market economy," Gamso writes in an article for Thunderbird.

The other countries can review any agreement before it's signed, terminate the trilateral agreement, and strike a deal between themselves. In effect, they can kick out any countries wanting to forge trade agreements with non-market countries. While Article 32.10 doesn't specifically name China, analysts believe the Trump administration is targeting China through this provision, Gamso writes.

Infrastructure

Even as the Mexican government's decision to cancel the remaining construction work at the Mexico City airport has generated confusion, projects underway at the country's ports should benefit many shippers.

In 2012, the administration of then Mexican President Enrique Peña Nieto set out to double port cargo volumes by 2018, from 260 million tons to more than 520 million tons, according to export.gov, a U.S. Department of Commerce service.

Among the projects is a $1.6-billion investment to construct five new terminals and a cargo processing and logistics zone at the Port of Veracruz. This would quadruple its installed capacity to more than 90 million tons by 2030.

At the Port of Manzanillo, the second-largest port in Mexico, projects underway will provide more than 44 million tons of installed capacity. The development of a new industrial zone with additional rail capacity next to the port could make the port more attractive to shippers looking to move goods north into the United States and Canada, according to export.gov.

Cargo Processing Partners

In August 2016, the U.S. Customs and Border Protection (CBP) and Ricardo Treveno, administrator general of Mexico Customs, announced the pilot of a Unified Cargo Processing Program at the Mariposa Port of Entry in Nogales, Arizona.

Under the pilot, CBP and Mexico's Tax Administration Service conduct joint, rather than separate, cargo clearance examinations to reduce wait times and costs.

By September 2017, the program had been implemented at five locations, with plans to expand. "The agencies work side by side to conduct one inspection, versus two," Lee says. In Nogales, wait times dropped from several hours to less than one hour.

Mexico appears on track to meet its expansion goals. Cargo mobilization in its ports has reached 470 million tons, or close to the 520 million goal, export.gov reported. Expansion of Mexico's maritime port capacity "will absolutely have a positive supply chain impact in Mexico," Lee says.

Moreover, despite the changes occurring and the uncertainty that results, it will be difficult to "march back" the tightly connected trade links and supply chains that span the two countries, says Morris Cohen, a professor at the Wharton School at the University of Pennsylvania. The problems facing companies operating across the U.S.-Mexico border are complicated, but "industries solve and re-solve problems as their constraints change." ■

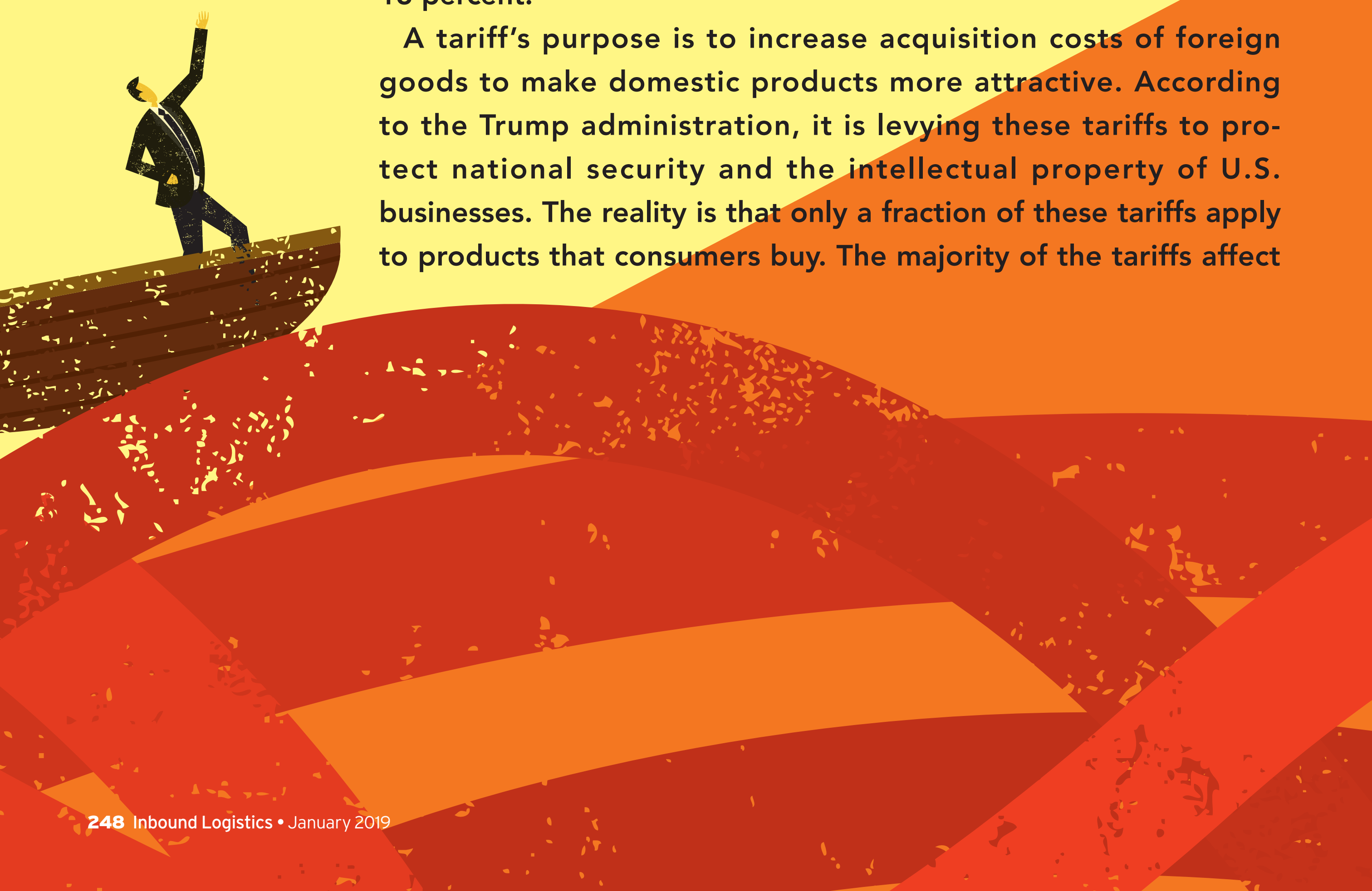
Shedding Light on New Tariff Impacts

Recent rulings have you tariff-ied? Relax. These steps will guide your way.

By Beth Pride

2018 was a tumultuous year for many global companies when, practically overnight, they were hit with a wave of suddenly volatile tariffs. For many, the impact was a direct hit to the bottom line. In October 2018 alone, tariff payments were up 104 percent from October 2017, while import values rose only 13 percent.

A tariff's purpose is to increase acquisition costs of foreign goods to make domestic products more attractive. According to the Trump administration, it is levying these tariffs to protect national security and the intellectual property of U.S. businesses. The reality is that only a fraction of these tariffs apply to products that consumers buy. The majority of the tariffs affect



"intermediate" and capital goods—components used to produce consumer goods.

As a result, consumers should brace for a wave of increased prices due to the tariffs. They will likely do their best to move away from imported goods impacted by the tariffs and purchase cheaper alternatives whenever possible.

Prepare for Impact

One significant challenge resulting from these new tariffs is that the availability of a domestic alternative is not guaranteed. And without a domestic alternative, it will likely cost a company more to produce its items. This reality may result in passing along increased prices to customers, moving production overseas, laying off employees, or potentially closing down production.

It has gotten even more complicated now that the European Union and countries including China, India, Turkey, Russia, Canada, and Mexico are imposing retaliatory tariffs on a number of goods that are essential to the U.S. economy.

So, what should U.S. companies do?

First, it is critical for a company to have the right data before attempting to answer that question. And to get the right data, companies must make sure that their products are classified under the correct Harmonized Tariff Schedule (HTS) code.

The HTS categorizes a product based on its name, use, and/or the material used in its construction and assigns it a 10-digit classification code. Each HTS code has an associated tariff rate or duty. There are more than 17,000 unique classification code numbers.

Companies can classify their own products, though the process is complex and requires a deep understanding of the products. One resource is Customs and Border Protection (CBP), which provides Informed Compliance Publications (ICP) that offer guidance on how to apply the General Rules of Interpretation and how to use the Explanatory Notes when classifying goods.

CBP also provides the Customs Rulings Online Search System (CROSS), a searchable database of CBP rulings.

Customs and Border Protection agents review import shipments and issue Requests for Information on merchandise they believe may be subject to section tariffs if the importer did not pay the additional duties.

Many companies are struggling as a result of the new higher duties on their imported products. The first step toward mitigation is understanding the fiscal impact of this new reality. Ask your customs broker for this information or obtain CBP's free Automated Commercial Environment (ACE) account and run the entry summary lines by HTS number report.

With actual import data in hand, prioritize the report by the highest duty paid by HTS number. Compile a list of impacted section tariffs and total duty exposure based on previous imports.

Consider Additional Risks

Section tariffs also expose companies to other risks in addition to their fiscal impact, including:

- **Customs bonds.** Section tariffs result in duties levied on companies that previously had duty-free products. In the past, these companies paid nominal bond amounts because of the lack of duty exposure. Now, CBP is issuing insufficient bond notices that terminate insufficient bonds and demand that importers replace them with new bonds with the correct values. Because companies can't import without a customs bond, this is a major issue for those that may not be able to afford the higher bonds or get the collateral to secure the bond.

- **Incorrect classification.** Some companies forget to ensure that their customs broker gets the correct classifications. This may result in the customs broker using the vendor HTS or an incorrect HTS. Include the HTS number on the commercial invoice to avoid any issues; more advanced companies include both the origin and destination harmonized codes.

- **Entry correction.** Incorrect classifications will likely mean having to correct prior import declarations. This is a significant undertaking and can result in increased costs and administrative burden.

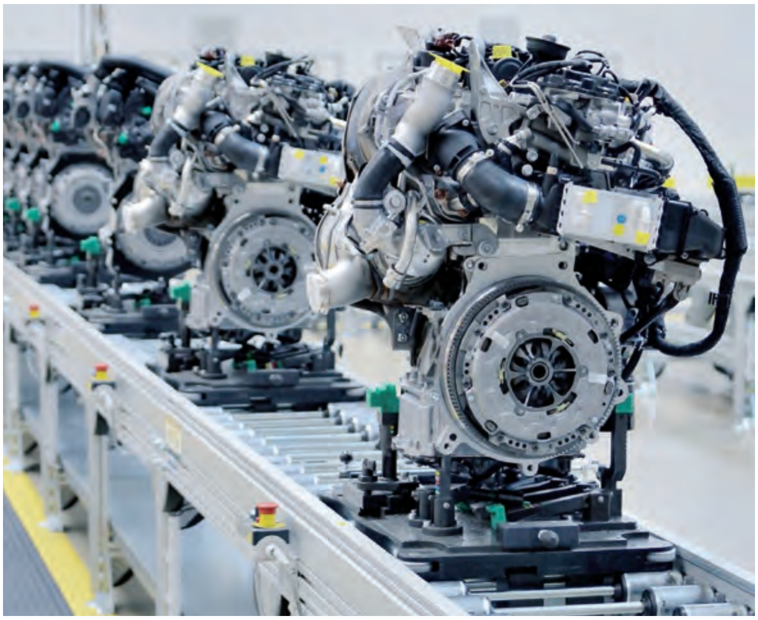
Following the Origin Trail

Understanding a product's country of origin is key to its classification, but it's not as straightforward as you might think. Country of origin is only simple if a product is wholly grown, manufactured, and assembled primarily in one country. If the item is assembled in one country from components made in multiple countries, country of origin will be the country where the last substantial transformation took place.

For example, the Section 232 tariff actions on steel and aluminum imports were imposed for almost all countries, while the broader Section 301 tariff actions are for China alone. Once a company knows its Harmonized Tariff Schedule (HTS) numbers, it needs to know the item's country of origin to determine if its products are subject to these "section tariffs."

Recent Customs and Border Protection (CBP) rulings make determining the country of origin more complex. As many products are manufactured from components of multiple origins, it is critical to review costed bills of materials to determine country of origin.

In these rulings, CBP determined that items assembled in Mexico from China-originating components do not result in a substantial transformation. Thus, these items remain products of China for Section 301 purposes, although the item would be marked Country of Origin Mexico because the assembly did take place in Mexico. These recent rulings take the position that if the components do not undergo a physical change, then there is no change in character and no relief from the section tariffs.



This car engine's country of origin is determined by where its components underwent the last substantial transformation.

- **Requests for Information.** CBP issues Requests for Information on imports of merchandise that they believe may be subject to section tariffs if the importer did not pay the additional duties. Requests for Information can indicate that the CBP is initiating a formal investigation. Respond quickly and completely to Requests for Information; do not rely on your customs brokers to respond.

There are several ways to minimize the impact of these tariffs:

- **Tariff engineering.** This is a legitimate way to leverage product design to lower duties. Look at options such as altering a product or using different materials to result in a different HTS, along with partial assembly or removal of essential functionality.

- **Alternate sourcing and production.** Determine if you can source or produce items elsewhere. If this is a viable alternative, estimate the cost of change and impact to cost of goods sold (COGS). Compare that to duty estimates if you don't make sourcing changes. Some sourcing changes require relocating production. If this is an option, review the costs to establish production in another country and its impact on COGS. Evaluate all options based on cost and the lead time required to move sourcing or production.

- **Foreign Trade Zones (FTZs) or bonded warehouses.** Evaluate whether key manufacturing processes can occur in an FTZ or bonded warehouse that would result in a new HTS that is not subject to the section tariffs.

- **Duty drawback.** If goods subject to section tariffs must be imported, will they be exported? If so, programs such as duty drawback may be an option.

2018 was the year of the tariff but don't expect them to go away any time soon. Even if your company is not directly impacted, it is likely your suppliers are.

Look at these section tariffs as a global supply chain concern and don't limit your analysis of the situation to a single country or source. These tariffs may be disruptive to global growth and prosperity so your company should be invested in understanding them and building business strategies to weather the storm.

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WMS
TMS

INTEGRATED WMS AND TMS SOLUTIONS **INCREASE VISIBILITY AND COMMUNICATION** AND OPTIMIZE THE MOVEMENT OF GOODS.

GET IT TOGETHER

BY TOM GRESHAM

A supply chain operation with unreliable communication between its warehouse and transportation components is like a perpetual fire drill: Every day is filled with surprise, uncertainty, and scrambling to keep up with the unforeseen, says Evan Garber, CEO of EVS, a Colorado-based warehouse management and supply chain technology company.

"A lack of integration is a lot of people saying, 'Shoot, I forgot,'" Garber explains. "If a truck is going to be two hours late, for example, and somebody forgets to let the dock know about it, that dock is blocked for two extra hours, keeping another truck from using it. It just causes chaos."

As a result, organizations increasingly have embraced the need to integrate their warehouse management and transportation management systems. Integration sharpens visibility, accuracy and speed, preventing the chaotic fire drills that can keep an organization from operating at optimum efficiency.

The largest, most successful companies--"the thought leaders"--have been using integrated systems for at least the past five years, notes Eric Lamphier, senior director of product management for Manhattan Associates, an Atlanta-based supply chain software company. And the practice continues to spread to mid-tier organizations and beyond.

SEPARATING FROM SILOS

"Companies that are aspiring to great supply chains are seeing leading companies integrating their systems and concluding that they have to do it too," Lamphier says. "Companies can't operate in silos anymore. They need a much more unified experience."

National DCP, an Atlanta-based supply chain management company that serves Dunkin' Donuts franchisees in 51 countries, works with Manhattan Associates to integrate its warehouse management system (WMS) and transportation management system (TMS). The company "has benefited greatly from having an integrated ecosystem," says Chris Lafaire, senior vice president of information technology for National DCP. It projects the integration will reduce annual transportation costs by 3 to 7 percent, improve backhaul opportunities by 10 to 20 percent, and drop waste and spoilage by 10 to 20 percent, according to Manhattan Associates.

Better visibility is the key. "In the past, we used a TMS software and a separate WMS software, which always caused interface issues," Lafaire says. "Since we integrated our transportation management and warehouse management system using Manhattan's middleware, we have eliminated all the interface issues, data discrepancies, and inventory problems we faced in the past. We have benefited from having accurate inventory and transportation information across all our systems."

WMS/TMS INTEGRATION SHARPENS VISIBILITY, ACCURACY, AND SPEED AND KEEPS SUPPLY CHAINS OPERATING AT OPTIMUM EFFICIENCY.

OPTIMIZATION AND VISIBILITY

Companies can sync their WMS and TMS operations in two ways: by integrating two existing systems or by adopting a unified WMS-TMS solution. Ultimately, the main goal is to align the operations.

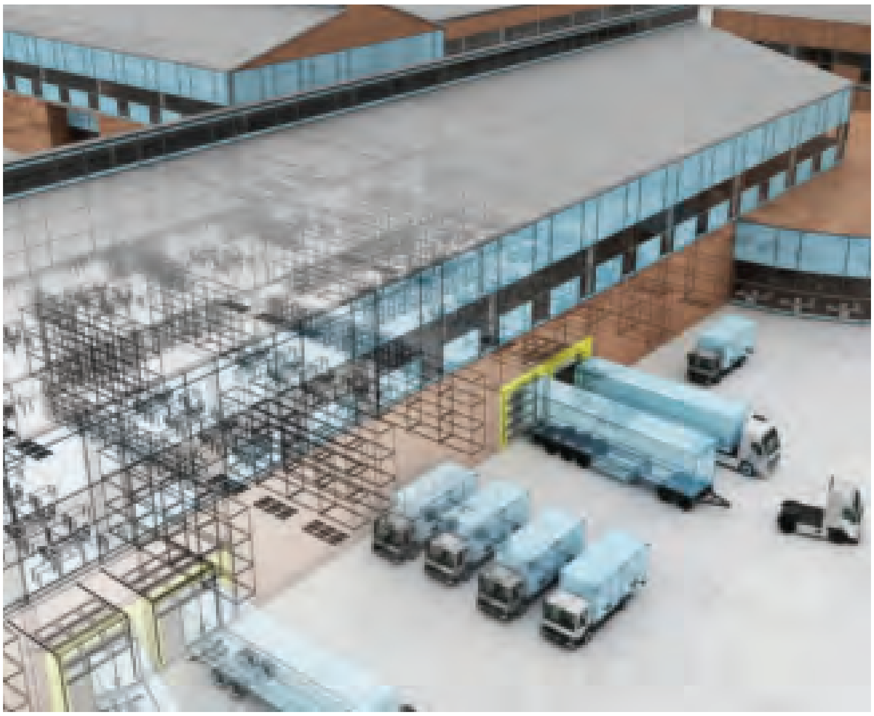
A WMS orchestrates inventory in the entire warehouse. It knows what inventory is present and what's coming in and going out. It tells warehouse workers what to pick and where to store items. However, if the WMS doesn't know the details of inventory arrivals and when trucks will be ready for departure, the ceiling on efficiency is low.

"When the orchestrator of your inventory doesn't talk to your TMS, then people are picking and packing for shipping, but don't have a good idea of where they should be staging the inventory and when the truck is coming to pick it up," Garber says.

In contrast, when the WMS and TMS communicate, warehouse operators can make decisions to ensure that items are picked and prepared at the ideal time. "When the order arrives, the departure dock is scheduled and the warehouse management system can tell pickers where they need to go, what they need to do, and when they need to pick," Garber says. "When the truck shows up, the inventory is ready."

If the truck shows up and the inventory isn't ready, a company can incur late fees. They can also start to have problems with carriers and even customers. "That's why it's important to orchestrate data from the initial customer request all the way through warehouse scheduling and out the door to transportation," Garber says.

An integration of WMS and TMS can help ensure that warehouse and transportation systems are aligned for maximum efficiency.



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A warehouse operation cannot be optimized without integration with its transportation end.

"The more information you have about what comes in and out of the system, the better off you will be," Garber says. "If you're willing to optimize within the four walls of the warehouse, but don't know when trucks are scheduled, it's hard to achieve truly efficient operations. The more information is shared, the more you can optimize."

"You can't have end-to-end supply chain visibility without strong integration between your WMS and your TMS," agrees Dave Giblin, vice president of operations for ODW Logistics, a third-party logistics provider based in Columbus, Ohio.

"Take the simple example of a WMS generating a tracking number for an outbound shipping order," Giblin says. "If that information is not transitioned to the TMS, it may track the order, but it doesn't link that order back to the WMS.

"Without that exchange of data, the company misses out on an opportunity for the end-to-end connectivity that not only provides visibility to the product's location, but also provides the ability to do detailed line-item cost reporting, cost accounting, and predictive analytics. It is difficult to achieve those benefits without a strong integration between the WMS and the TMS."

WITH A UNIFIED PLATFORM, COMPANIES CAN LOOK AT WAREHOUSE AND TRANSPORTATION MANAGEMENT HOLISTICALLY RATHER THAN AS TWO PIECES THAT NEED TO BE RECONCILED.

For National DCP, a key criteria to an effective WMS-TMS integrated platform is "the use of a central location to manage all the interfaces and integration points that can provide visibility to any potential issue," Lafaire says

When a WMS and TMS are not integrated, one tends to lead the other, resulting in an imbalance in the operation. With a unified platform, however, organizations can look at warehouse and transportation management holistically, rather than as two pieces that need to be reconciled.

"When your visibility is in one place—not in a TMS and also in a WMS—the status of orders, shipments, carriers, deliveries, and planned arrivals is unified in one converged platform," Lamphier says.

CUSTOMER SERVICE AND PERSONNEL

An integrated WMS-TMS is crucial to maintaining strong customer service. Without integration, warehouse operations work too reactively to maintain a tight schedule. Workers are constantly rushing to catch up to prepare orders and load trucks, inevitably leading to late deliveries. Without visibility, the warehouse is always surprised, and "you don't want surprises," Garber says.

"If the systems are providing all that information, then you can avoid surprises," Garber says. "Of course, mistakes and last-minute things happen, but they can be minimized and become exceptions rather than the way the warehouse operates.

"Then you can optimize and take care of exceptions when they occur," he adds. Integrated systems allow for automated feedback loops that raise alarms throughout the supply chain when issues arise somewhere in the warehouse or transportation system.

"Without tight integration, you're going to either have bad alerts or no alerts at all," says Bill Grannis, vice president of information technology for ODW Logistics.

In addition, using an enterprise-level WMS and TMS with standardized methodology allows for open systems and open transactions with vendors and customers.

"When operations run manually or with in-house software it's hard to reach out to vendors, customers, and suppliers when everything is one off," Grannis says. "It's a huge advantage to operate with a state-of-the-art, integrated WMS/TMS solution."

A successful WMS-TMS integrated platform can help eliminate boundaries between warehouse and transportation operations that hamper visibility and cause delays and miscommunication.

Photo: Manhattan Associates


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Warehouse operations, including those with a WMS, often emphasize keeping workers busy and efficient. "But when it comes to your own fleet or even the assets that you're contracting with and tendering to the TMS side, it's important to ensure the warehouse workers and drivers are in the know and effectively utilized, so you don't waste resources," Lamphier says.

INTEGRATION CHALLENGES

One chief challenge to integration is that existing WMS and TMS technologies often are not compatible.

National DCP, a $2-billion supply chain management company serving Dunkin' Donuts franchisees, cut transport costs, reduced waste and better leveraged backhaul opportunities by integrating its WMS and TMS.

In particular, WMS technology tends to be older, less sophisticated, and less amenable to integration. As a result, integration typically means an overhaul of existing systems.

"That's why integrations are hard," Garber says. "You have to say goodbye to the old and hello to the new. And that means making an investment."

It can be challenging to wed the mindsets of the warehouse and transportation departments, which are accustomed to worrying about their own roles in relative isolation.

"That's not sustainable," Lamphier says. "And that's where we've seen the rise of the chief supply chain officer who's being more thoughtful and holistic around the idea that the company can do an optimal job in warehousing, but fall on its face and drive poor customer service and high costs in transportation. They've got to be mindful of the whole enterprise."

A company might process fewer orders at a different sequence in the distribution center with the warehouse management system, and that might cost 5 percent more. "But if the company saves 45 percent on transportation spend and customers receive their goods more rapidly, then the business wins," Lamphier says. "Decision makers are setting forth these kinds of more thoughtful objectives."

National DCP saw benefits from using Manhattan's standard features rather than using customized software specific to its business practices. That is "one key success criteria" for the company's integration experience, notes Lafaire.

"Every company believes it is unique, but by tailoring and adapting some business practices we can leverage proven integration and features on the Manhattan software," he notes.

Organizations looking to adopt an integrated WMS/TMS solution should map out their processes, goals, and opportunities for improvement.

In addition, they should "fully vet whether the solution they are architecting will be able to fulfill their specific needs," Giblin recommends.

"Companies sometimes get a shiny object in front of them and say, 'Hey, this looks great. We're going to get this.' But then it doesn't fit what they are trying to accomplish," he notes.

Whatever the steps to get there, all companies should consider integrating their warehouse management and transportation management systems software to boost operational efficiency and improve customer service. ■

RESPONDING TO E-COMMERCE DEMANDS

The Amazon effect and the rise of e-commerce is a clear factor driving companies to adopt an integrated approach to warehouse and transportation management. Demand patterns are changing and that "has changed the mindset of shippers, even those who aren't yet doing a lot of e-commerce," says Eric Lamphier, senior director of product management for Manhattan Associates.

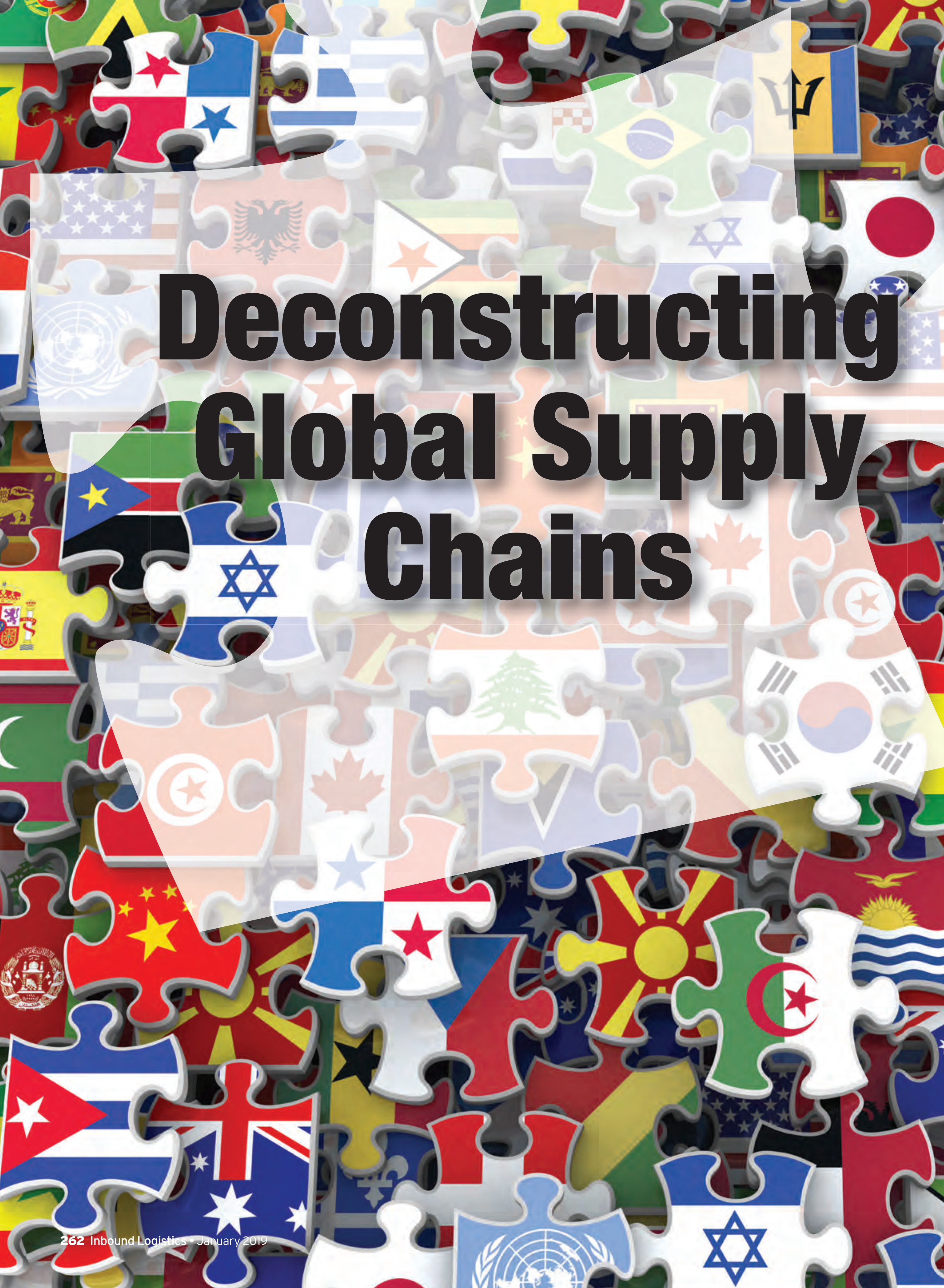
"Shippers are striving to be faster and more consumer-centric," Lamphier says. "They want to know, with a level of certainty, that they have delivered on the promises they made to customers that goods would be delivered on time.

"That concern for customer service is driving modernization, new systems implementations, and WMS-TMS integrations," he adds.

The need for speed is spurring the rise of a waveless optimization model that solves problems as they arise and contemplates orders and shipments continuously throughout the day rather than optimized in batches via a more linear approach.

"For that to happen, systems have to be able to talk to each other constantly," Lamphier says. "An effective WMS/TMS integration is essential."

WMS/TMS integration is essential to serving increasingly demanding shopping expectations.



Deconstructing Global Supply Chains

By Mark Millar

Despite a shift toward regionalization, the era of complex supply chain ecosystems is far from over.

In recent decades, the story of globalization has been one of ever-increasing complexity for global supply chains. Producers have shifted manufacturing from one low-cost location to the next–resulting in complex global supply chain ecosystems.

More recent trends toward regional supply chains reflect accelerating preferences for nearshoring and onshoring, plus the need to improve visibility and velocity in order to drive competitive advantage.

But despite this shift toward regionalization, heightened consumer expectations mean that while supply chains may be getting shorter, their complexity is here to stay.

Trade Growth Lags GDP Growth

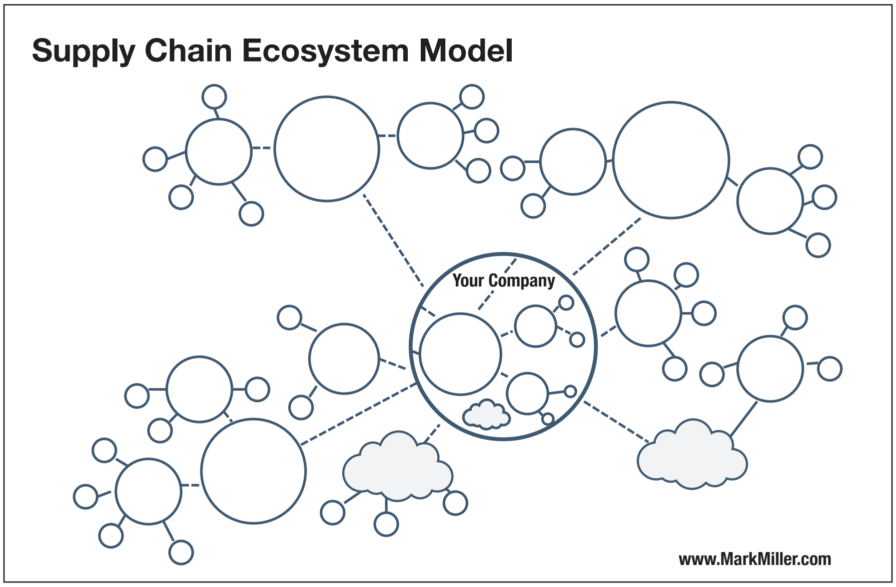
We have known for some time that the historic 2:1 ratio of trade growth relative to economic growth ground to a halt following the 2009 Global Financial Crisis (GFC).

For almost two decades prior, between 1990 and 2008, world trade consistently grew at twice the rate of GDP (Gross Domestic Product), which averaged 3.2-percent annual growth. More recently, the trade-to-GDP correlation has become closer to 1:1.

However, it seems that in the current climate of anemic GDP growth across the developed world, even a 1:1 ratio will be challenging to achieve.

Among the many complex factors behind the latest slowdown is the lingering GFC hangover effect–throughout the developed markets–of reduced demand for consumer goods, many of which are imported via complex global supply chains.

Ironically, these complex global supply chains were themselves



Companies are seeking to rebalance their supply chain complexity by adopting a more regional approach, moving some production activities "closer-to-home."

created by the globalization frenzy of the past three decades, when outsourcing, offshoring, and unbundling initiatives fueled the dramatic growth of manufacturing in Asia, with China notably becoming positioned as the "Factory of the World."

The endless pursuit of low-cost country sourcing (LCCS) initiatives chased the lowest cost locations for labor-intensive manufacturing activities. This led to the large-scale unbundling of production in terms of both location and process—which, in turn, drove the widespread globalization of supply chains, consequently becoming today's complex global ecosystems, encompassing profound inter-dependencies.

This globalization resulted in a sustained period of continuous and rapid growth in worldwide cargo movements, now recognized as a massive "one-off gain" for international trade, albeit with massive benefits for international freight forwarders.

However, just about anything and everything that could be outsourced and offshored to Asia has been. Hence, in recent years, we have seen only incremental growth in trade volumes.

In addition, governments across the developing world have focused on domestic infrastructure investments to drive economic growth, while across all markets there are increased elements of protectionism, which is a drag on global trade.

Large proportions of developed world populations have come to feel "left behind by globalization," resulting in the dramatic rise of populist protectionist sentiment that has truly polarized two of the world's largest economies, first with Brexit in the United Kingdom, closely followed by President Trump in the United States.

The consequences include a substantial increase in the use of trade-restrictive measures such as tariffs, while bilateral trade agreements based on national interests are taking precedence over multilateralism.

More than 1,196 new discriminatory trade measures were introduced worldwide during 2018, according to Global Trade Alert, more than three times the number of liberalizing trade measures at just 348.

As WTO Director General Roberto Azevêdo articulated to world leaders at the 2017 World Economic Forum in Davos: "The net positive effect of trade means nothing if you've lost your job, so we need better domestic policies to support people and get them back to work."

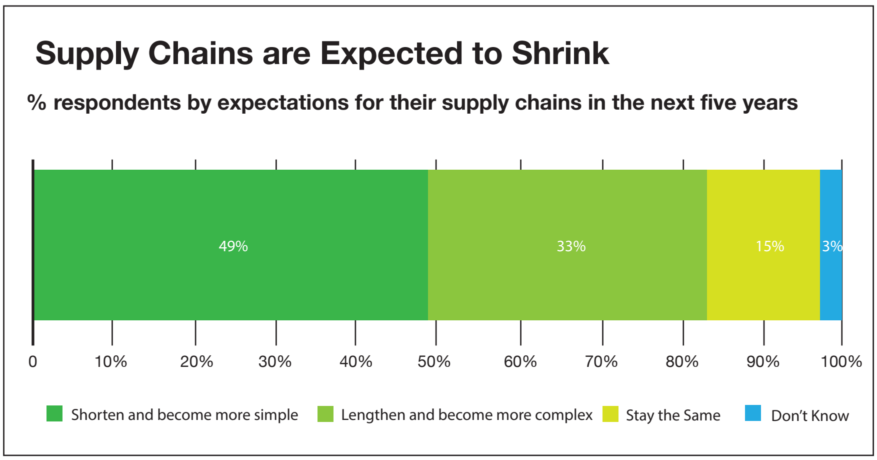
Supply Chain Velocity Drives Competitive Advantage

Supply chain velocity is an additional factor influencing the re-thinking of goods flows beyond global to regional. With ever-shortening product lifecycles and speed-to-market a key differentiator, supply chain velocity is becoming another key component of competitive advantage.

Companies are seeking to rebalance supply chain complexity by adopting a more regional approach, with the movement of some production activities—but not all—that can migrate closer to home. This reconfiguration of the manufacturing landscape will result in regional supply chains such as "Made in North America for America" or "Made in Eastern Europe for Europe."

However, by no means does this result in a mass exodus of manufacturing from Asia.

The well-entrenched global supply chain ecosystems that service developed markets in America and Europe from low-cost sources in Asia are very well established, finely tuned and highly



Source: The Economist Intelligence Unit survey

efficient; they cannot be replaced easily. Plus, they need to expand to serve the rapidly growing local markets across the developing economies.

Let's not forget the critical question: Where are the next 100 million middle-class consumers?

Global companies must not ignore or underestimate the importance of domestic consumer markets in the emerging economies across Asia, whose potential is enormous. Indeed, "Made in Asia for Asia" will gradually become a leading model for regional supply chains that serve these growth markets in the Far East.

However, to increase velocity in serving their global markets, more companies are exploring how they can shorten their supply chains.

Regional Supply Chains Will be Shorter, But Will They Become Simpler?

While supply chains greatly increased in length and complexity during the globalization era, looking forward, many business leaders expect to see fewer links in their supply chains, according to a study by The Economist Intelligence Unit.

Nearly half of respondents (49 percent) say they expect their supply chains to shorten and become simpler during the next five years, while one-third of respondents say they expect supply chains to lengthen and become more complex. Participants include businesses large and small, with almost half of this group having annual revenues of less than USD $500 million.

Study participants cite operational improvements and innovation as key factors in helping businesses reduce the length and complexity of their supply chains.

By geographic region, almost six in 10 respondents in Asia Pacific (59 percent) say they expect to see shorter supply chains, compared to 46 percent in Europe and 45 percent in North America.

Reflecting the ever-increasing need for better compliance and governance, more than one-third of respondents (36 percent) say they agree with the statement that "a rising regulatory burden will add cost and complexity to managing their supply chains."

Supply chain visibility is confirmed as a key priority, with 54 percent of respondents saying that achieving complete transparency about where and how their products are made is an important or very important goal.

While regional supply chains will be shorter, they are not necessarily simpler. Being closer to market enables more rapid product innovation and customization, empowering companies to address consumer preferences for products tailored to their needs.

Despite the complex challenges involved, such increased responsiveness and agility will prove to be a durable source of differentiation and competitive advantage.

A New Era for Supply Chains

After three decades of globalization, many companies expect their supply chains to shorten in the years ahead.

While some manufacturing processes will migrate closer to home, speeding the shift toward regionalization, numerous well-established and finely tuned global supply chains will remain in place, adapting to serve expanding local markets.

For businesses, supply chains may be shrinking, but the massive complexity embedded within today's supply chain ecosystems is still far from being over. ■

ABOUT THE AUTHOR

Mark Millar, MBA is the author of *Global Supply Chain Ecosystems*, in which he presents detailed and practical insights that help business leaders make better informed decisions about strategies for competitive advantage in today's complex, connected world. A visiting lecturer at Hong Kong Polytechnic University, Millar was recently recognized by industry peers as "The Most Inspiring Supply Chain Professional" at the 2018 Supply Chain Asia Awards. Contact him at: www.markmillar.com, or mark@markmillar.com

Prepare for the Future

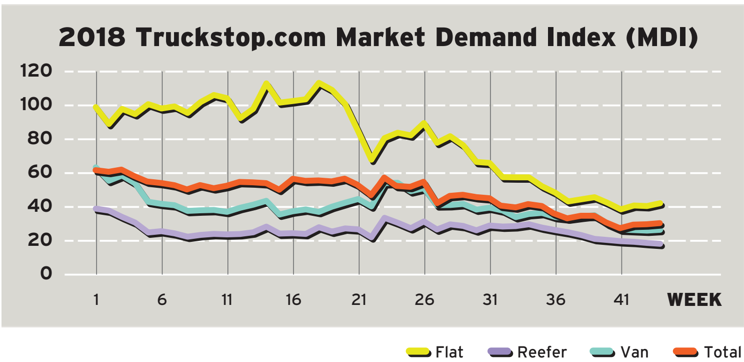
What is happening and what will happen to trucking capacity and costs? Here's the data you need to help plan for the coming months.

By Noël Perry

SPOT CAPACITY

The steady fall has paused.

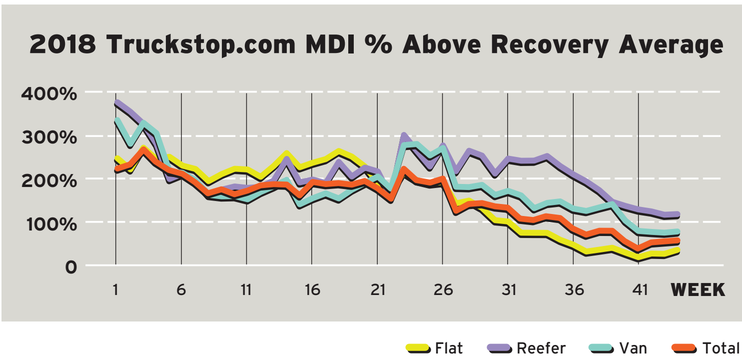
The "where" of the spot market: We now have spot data through the end of October 2018, eight full months into the 2018 capacity event. We also have contract data through September, seven full months. The "what" of the spot market: The graph (*right*) shows Truckstop.com's capacity metric, Market Demand Index (MDI). High numbers indicate tightness.



We see two things here. First, the values for each truck type have been declining since about week 22 and are also well below the peak values at the beginning of the year. The market is not nearly as tight as it was. Second, in contrast, more recent weeks have seen a flattening of the trend, only the second such flattening in this seasonalized data for 2018.

Strong levels persist but are flirting with normalcy.

The chart *(right)* provides a relative look at market strength. It measures percent above the average from this recovery, a relevant comparison point. We see the same declining picture as above. The



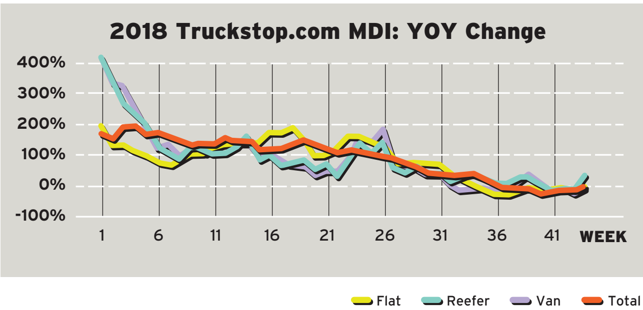
key number here is the 50-percent level, roughly the point above which growth cannot be explained by simple random variation. Using that standard, the flatbed market is back in sub-50-percent "normal" territory. Using the same logic, one can also use the 200-percent level as the threshold for crisis conditions. The market has spent much of 2018 above that level, but only the reefer market is currently pushing against that standard.

Conclusion: The market is tight, but no longer critically so. Again, the decline in tightness is currently absent, but is no longer at crisis levels. It is wise to keep this in mind because the rhetoric within the industry is still quite shrill.

Things were worse last year.

The last of the three views (*below*) is the year-over-year (YOY) story. It shows the familiar declining, then stabilizing trend, but has a different emotional punch. That is because all but the reefer market are in negative territory. The markets are clearly less tight than one year ago. You see this same story in the spot market pricing numbers below.

This data reminds us of the importance of understanding the state of the comparison data (comps) when looking at YOY charts. In 2017, we were coming off a capacity tightness stemming from two hurricanes. The capacity numbers



spiked in September and early October before receding in November and then jumping to record highs with the Electronic Logging Device (ELD) mandate late in December. Beware of YOY numbers, given the wild gyrations of the market between September of 2017 and March of 2018. Also, next year the YOY numbers will pick up after June when the comps are the declining numbers of July-September 2018.

Very tight capacity is coming back to earth — at various rates.

This capacity data sends three clear messages.

• First, it is easy to understand the dramatic events of the past year. The spot market—always the lightning rod for the truckload—got very tight early in the year and sustained much of that tightness through mid-year. As a result, prices rose rapidly, and shippers had to scramble for capacity.

• Second, results have varied by truck type. The flatbed market has led the parade in absolute terms, but has been less far above its "normal" levels. The reefer market has been the opposite. Such complexity reinforces the value of doing your statistical homework.

• Third, consistent with logic, as the metrics decline toward more accustomed levels, the rate of decline falls.

Will the leveling be sustained?

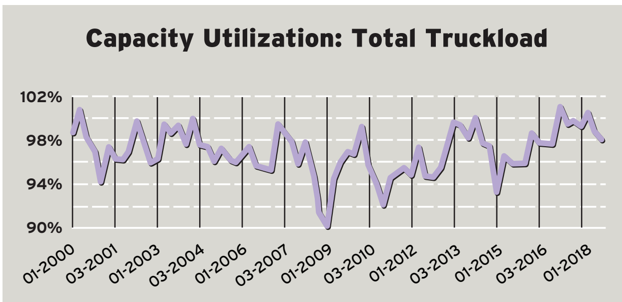
It is not clear how much longer the still significantly elevated levels will persist. My forecast is that the decline will resume once we pass the holiday rush in a retail sector thoroughly traumatized by the online marketing explosion. Note that these capacity levels have clearly been positively affected by the strong economics of 2018. Should the economy slow in 2019, as many economists fear, these metrics could easily retreat to 2015 levels.

CONTRACT CAPACITY

The mother of capacity crises

The final chart in this discussion on capacity (*below*) presents Transport Futures' estimation of capacity utilization for the entire market. It gives us a good view of pressures on contract relationships, not represented by Truckstop.com's spot market data. This data provides a useful historical perspective with which to judge the most recent developments.

It is easiest to understand by looking at the 100 percent, the point at which the market begins feeling major stress. That is a surprisingly common occurrence as the market struggles to adjust to rapid demand swings, especially after downturns as in 2010 and 2002. Most approaches to 100 percent, however, are short-lived. It is when the market tarries in that vicinity that things get tough; see 2003-2004, 2013-2014 and 2017-2018. It is notable that the visit to the 100-percent territory has been most extreme in the latest event, a fact entirely consistent with other data sources.



But something is happening.

That visit is apparently over, however, as the market has receded to high-normal levels and is expected to fall farther in 2019, especially in the second half. So, we have a second capacity metric that shows the record tightness of the first half of 2018 and a decline since. These capacity dynamics have a major implication on pricing.

2019 PRICING REVIEW

We are just past the peak of the most spectacular pricing event in truckload history. How long before we are back to normal?

Industry dynamics that caused the burst of price increases are past their peak. The capacity metrics that we use to gauge industry pressures on truckload pricing are all declining. Although they are still at higher than usual levels, their movement is decidedly downward. That means, in the absence of some surprising new pressure, prices should follow. Indeed, spot prices, always the first to move in response to market forces, are already clearly lower than their early July peaks.

Were I not the obsessive analyst that my DNA and environment have produced, I would simply say that 2019 spot prices will be lower than those of 2018 but will still be easily higher than average. Contract prices will be slightly up in 2019: end of story. Perhaps, however, like me, you would prefer some data to support this view and maybe even some estimates more precise than "lower" and "higher than average." Okay, you asked for it: here we go.

2019 truck prices will be hard to forecast.

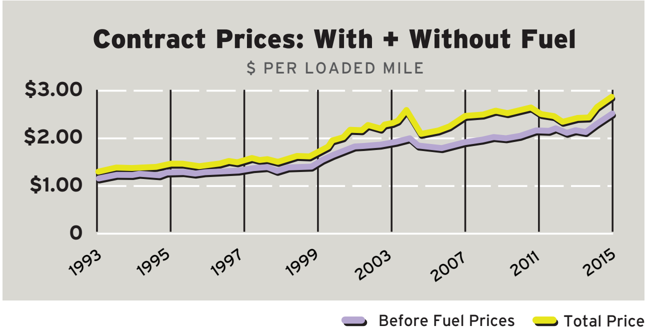
As is usually true of extreme events, the prospects for pricing over the next several years are fraught with uncertainty for two reasons. The first reason is the volatility inherent in the kind of extreme event we are experiencing. It implies greater-than-normal uncertainty until the market settles back into a normal mode. Crazy things have happened over the past year. Crazy things are likely to happen again before this trip to the Twilight Zone is complete.

Second, the volatility of this episode may be due to some permanent change in market dynamics that will remain with us well into the 2020s. If so, we must factor that into our forecasts. These are big issues that demand careful consideration. Accordingly, I will look at the historical record to search for clues to this chancy 2019 forecast.

Let's tease this puzzle apart.

On the contract rate side, we have good data going back far enough to give us some significant insight. I will start the analysis with contract data going back to 1993. The first principle of forecasting is to disaggregate the forecast into its constituent parts.

To keep things simple, I see three parts to the forecast: industry or "market" conditions, fuel, and general inflation. The total numbers that we will see in the market are the product of those three sources of growth or shrinkage. Unless we understand the contribution of each force, we won't know why prices are moving. One can just straight-line some relevant historical period. I will do that in part in this analysis. But a good forecast is best a forecast of such "why's." It considers whether things might change from the trends recent data reveals.



We'll start by stripping out fuel and inflation.

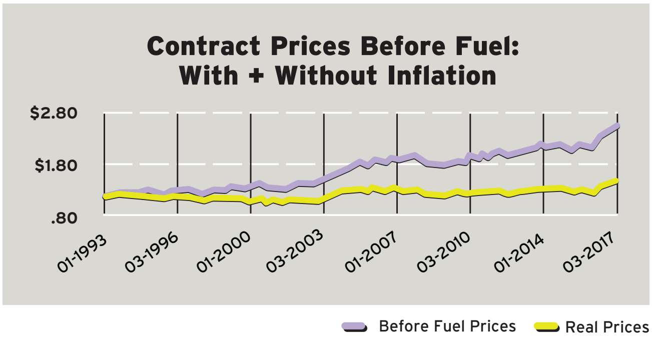
So, let's start with a forecast of the market why's then layer in inflation and fuel why's. To do that we need to first factor out the fuel surcharges from the historical data. The chart above does that, revealing the fuel price crisis of 2008, the tough times between 2010 and 2015, and the recent middling experience with crude oil inflation.

Given the hype of fuel issues, it is surprising to discover that fuel inflation has accounted for only 3.3 percent of the increase in truckload contract prices since 1993. This is just another piece of evidence to show that the energy crisis is over.

Shippers have had little to complain about for a long time.

The second task is to factor out inflation, something I do here using the Consumer Price Index (CPI) as my inflation metric. One could use several others. However, the story changes little. Unlike fuel, inflation makes a big difference. It accounts for 80 percent of price increases, and that includes the increases in the past year.

This means that shippers should look elsewhere when complaining about truck pricing, at least over the long run. It follows that one must, therefore, sweat the inflation assumptions in any forecast, because it normally is much more responsible for price change than other market conditions.



But I said we would start with the market why's.

So, let's look closely at the line of data in the chart labeled Real Prices (*see page 272*). Economists apply that adjective to indicate an inflation-corrected value because most users of price data want to understand what industry conditions have done to price, not the effects of the

wider economy. So, they call inflation-corrected prices "real" prices because they indicate what has really been affecting prices within their industry. In our truckload case, that says the "real" annual growth rate since 1993 has been .9 percent annually rather than the 3.2 percent annually realized in the uncorrected prices that economists call "nominal" prices.

Sure, inflation is important, but something else happened over the past two years.

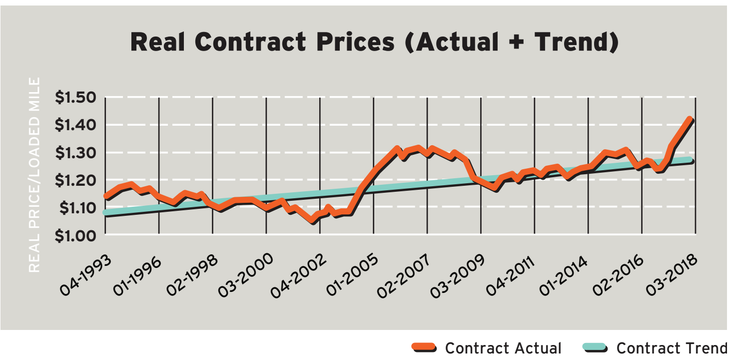
Although the inflation analysis tells us most of what is influencing truckload prices over a long period, it doesn't explain the 15-percent hop in prices since early summer 2017. To enable that analysis, I have arrayed inflation and fuel-corrected prices against the underlying trend in those prices.

The artifice quickly shows us that the price at any given time may be moving at rates very different from the long-term .9 percent per annum trend. It also says that such variation is usually not sustained. The only consistent deviation from trend was the steady price decline between 1993 and 2002. Prices have fluctuated since then but largely around the long-run trend.

But the data shows rapid increases sometimes.

Prices have two facets, easily seen in the data, that could produce high 2019 values. In late 2003 and early 2004, prices jumped 20 percent in just five quarters. That rapid acceleration showed up again in late 2017 and early 2018. In both cases, the market was reacting to strong freight growth and regulatory changes.

We also see an economically derived phenomenon in the 1993 bump at the left of the chart. This tells us that there is historical precedent for what we have experienced the past two years. It is why I have been predicting such a jump for six years. However, the historical data also shows that such bumps are not permanent. Eventually, the industry gives back the increases to resume growing slowly, roughly along the straight trend line calculated on the graph. Know that I am currently a pessimist.



How long will this bump last?

If we are just concerned about 2019, the most likely result is easy to see. In the 2004 bump, high prices lasted until the economy collapsed in 2008, almost a full four years. Let's see: 2017 plus four equals 2021. No sweat for carriers for two more years. But wait a minute! We also had a small bump in contract prices in 2014, the last time of market tightness. That bump lasted only two years. 2017.3 plus two years equals 2019.3. More about this below. My point here is to emphasize the risks of 2019.

What's the second facet about high prices you mentioned?

The data also show that the market does move from one long-run growth path to another–on occasion. Between 1993 and 2003, the real price of truckload trucking was falling. Then, after the 2001 slowdown ended, the regulatory and freight stimuli jumpstarted prices onto a new upwardly moving path, one that persisted at least until last year. That path, again, is only .9 percent up per year in real terms, but it is upward not downward.

If I showed you the data going back to 1935, when our industry got started, this upward movement has great meaning, because the 1993-2003 1-percent decline was merely a continuation of a very long decline–since 1935. Moreover, the decline shown here was merely a tired finale to a long history of spectacular decline, averaging more than 4 percent for almost 60 years. So, the 2003 shift from slow decline to slow increase is historically significant in its change of direction.

Are we in the middle of a permanent upward movement?

The majority of industry commentators believe this to be true, just as they believed it to be true in 2004. While the collapse of the 2004 bump says otherwise, the presence of important changes in pricing drivers leaves open the possibility that something is happening to move prices upwards on a sustained basis.

Labor costs are rising and should continue to do so until automation is in full swing. The move to internet marketing is also lowering productivity as appointment and delivery times become tighter. Note importantly that such changes are gradual, easily overwhelmed by the bump. The latter can easily cause a 10-percent jump in real terms verses 2-3 percent in any year from a sustained trend.

How about a one-time sustained increase?

Economists like to talk about "step-function" changes, events where results suddenly and permanently change. That happened in baseball about 1920, when Babe Ruth's astounding home run output taught the major leagues the proper way to attack the newly harder baseballs.

Several possibilities could impact truckload pricing. One is regulatory change. Although the industry is already staffing up to offset the most recent losses of capacity from regulatory change, the costs increases are permanent. This happened in 2003, with the first of the big Hours of Service changes. You can see a possible effect of that in the starting and ending point of the 2004 bump. The ending point is six percentage points higher than the starting point, possibly caused by the combination of labor inflation and Hours of Service losses.

Consider though that much of the 2000-2002 dip in prices that lowered the starting point of the bump was caused by the difficult freight downturn of those years. My best guess shows cyclically adjusted start and end points, with no deviation from the long-term slow growth trend.

Another possibility is more credible.

This crisis is a very strong one and could conceivably fund a step-function change. I see two possibilities: One is a proclivity for shippers to purchase larger-capacity buffers than they have recently. The steady rises in capacity utilization on trend are evidence of declining capacity buffers—all of which cost money. I estimate an upside effect from that at three percent.

More likely is a step-function increase in driver pay, currently estimated at an average 7-8 percent. Perhaps this is the first cycle where such increases are not given back during the next down cycle. Combined, the two possibilities could theoretically add 10 percent to rates, in essence keeping the current numbers the same distance above the trend line indefinitely. That is distinct from history (2003-2009) where the majority of the bump was given back—permanently.

But history says no.

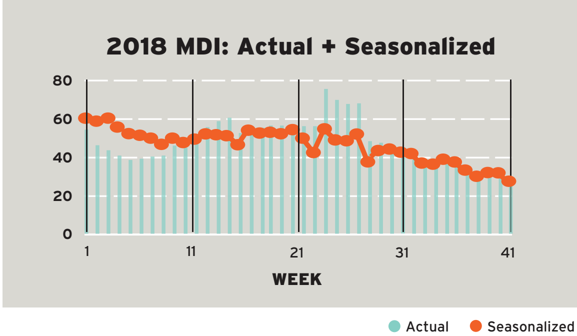
Our experience with regulation and driver shortages says that any sudden pricing increases are eventually given back, or, to some extent, spread over several years, making it part of the underlying trend increases.

This was clearly the case in the most similar historical event, that of 2004. Since this crisis has started much like the 2004 event, one must attribute most of its increases to such temporary forces. This supposition frames the fundamental question about the current event: Is it something new or just a somewhat more severe example of what we have experienced before? I vote for the latter, strongly.

The spot market says things will revert to normal.

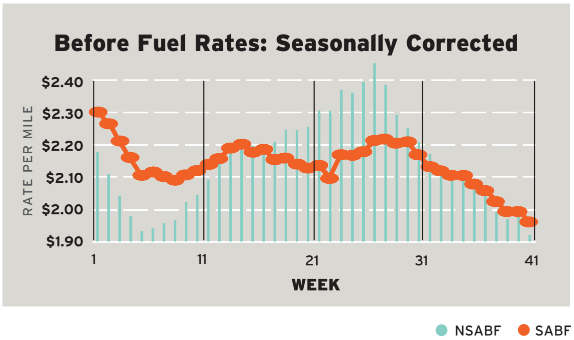
Consider the accompanying data. Truckstop.com's MDI peaked in January at three times normal levels of 20 and almost 20 points above the 2014 event. (We have no spot data from 2004.) However, since that peak, the seasonalized data has steadily receded, now standing only about five points above normal (20).

By this measure, and similar DAT metrics, the spot market, always a leading indicator for contract markets, is moving into the realm of normal pressures, not the extreme tightness we had during the spring. Spot rates normally follow MDI capacity condition by about six months. Sure enough, six months after the January peak in MDI, spot rates have begun a steady fall and now sit about $.30/mile above normal. The current trend would have them back to normal by January.



But contract prices are still increasing.

And increasing they should be, given the lags between contract and spot prices. When will they begin to move back to normal? The 2004 example says not until 2020.1. The 2014 data chronicles a lag of half that, suggesting a 2019.1 slump, seasonally corrected. In a market that appears to be accelerating its responses, I vote for the more recent precedent, expecting a peak somewhere late this year. That would be roughly halfway between the 2004 and 2014 precedents.



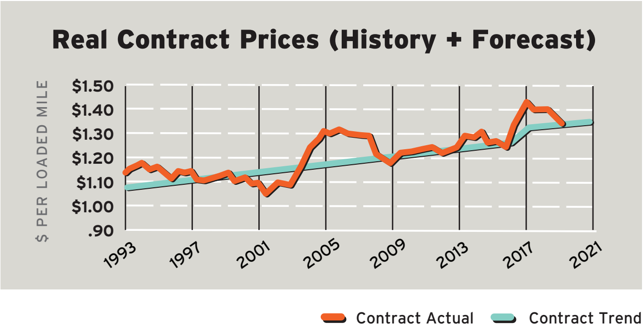
We are missing one more variable: The lags make the spot and contract market forecasts different.

Armed with this data, I conclude that the spot market will finish its record year on a downward path, while the contract market will finish at or near a peak. Let's start with the spot market. As one would expect from a market determined by daily swings in market conditions, its lags are shorter.

Unfortunately, we do not have data back to 2004, being limited to viewing the market's response to the lesser 2014 pricing crisis. In that event, spot prices reverted after roughly one year. Given this event has been more extreme, my current base forecast has it reverting significantly during the second year, sometime in late 2019.

As you look at these numbers, please do not be impressed with their precision. This is a highly uncertain forecast. Think of the spot forecast as saying significant spot rate declines "sometime in 2019, probably later than earlier."

That is, however, quite different from the common view that prices will remain high indefinitely. The one indefinite factor is the 3.9-percent permanent increase to the trend line that you can see between 2018 and 2019. That is the effect of the surge capacity and driver pay issues I mentioned above. Add that to the normal .9-percent per year trend increase, and one gets a 6.5-percent permanent increase in spot prices since they took off in early 2017.



For contract prices, think 2020.

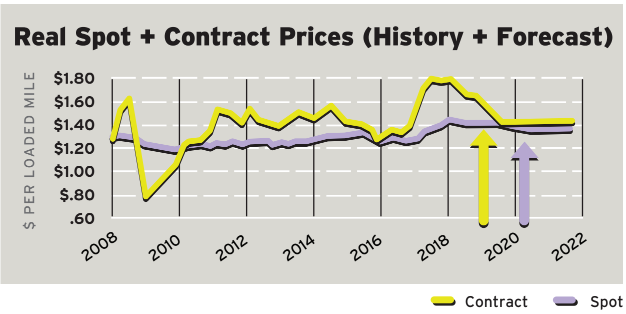
The accompanying chart (*above*) showing my contract price forecasts presents my belief that, although the lag between capacity and price is longer than with spot prices, it is shorter than the 2004 precedent. That's due to the 2014 precedent and my concerns about economic conditions in 2020.

Although these numbers do not reflect a recession, they do factor in slower economic and freight growth. Note that a recession, as feared by some economists, including me, would produce much lower numbers, clearly below the long-run trend, as they did in 2009.

Spot and contract prices dance differently.

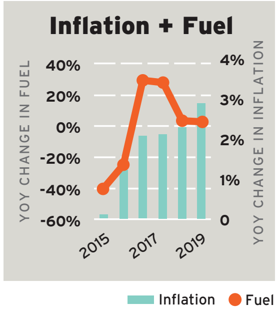
The best way to look at these two segments of pricing is to consider spot prices as a flagman telling the approaching locomotive engineer what is around the next bend. The brakeman waves the spot market flag vigorously to get the engineer's attention. Thus, we see that spot prices vary by more than twice the amplitude of contract prices. They rise farther and will fall more dramatically. Now just past the peak, carriers in spot markets remain in a euphoric state. The same dynamics say that one year from now those carriers will be moaning as shippers shout for joy.

The chart *(below)* also shows the lead-lag behavior of the two metrics. If the brakeman is to warn an approaching train of a hidden obstruction up ahead, he has to walk well



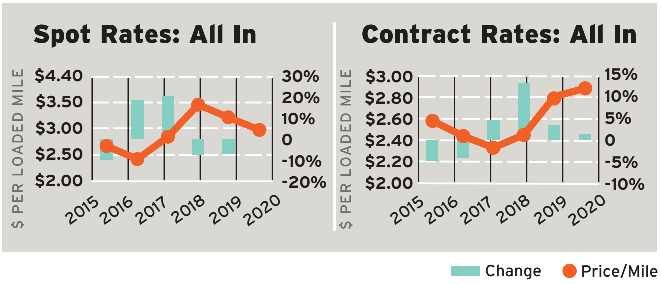
back from that obstruction to give the approaching train time to stop. In the same way, spot prices warn contract markets what is coming six to nine months ahead. So, the softening of spot prices I am predicting some time in 2019 should be a warning of a similar softening of contract prices in 2020. The same contract shippers who ignored the rise of spot prices in early 2017 should not despair when contract prices stay high in 2019. Their turn will come after the normal lags, a year later: spot prices first, contract prices next.

But what about inflation and fuel?



The graph (*right*) presents my outlook for inflation and fuel. The bars show the slow and steady price of inflation, a factor that is getting stronger. That is the downside of our currently strong economy. Although inflation has a yearly effect much smaller than fuel, its uniform direction (up) gives it a powerful cumulative effect, as evidenced by its historical influence on rates.

As recent results show, fuel is much more volatile in a given year, generating swings of 30 to 40 percent, even in the recent, relatively benign oil markets. However, as fuel flips from a positive to a negative, its cumulative effects are small. Note that the modest increases I show in 2019 and 2020 are bracketed by risks on both sides.



What numbers should I plug into my budget?

The final pair of graphs (*above*) presents this forecast in "All In" terms: my estimate of what shippers will actually pay, including fuel, inflation, and market forces. You will find these numbers more recognizable than the "Real Price" estimates published above. The real price estimates are of use mainly in figuring market rates of change. Since that is the most important task in this forecast, I used them. However, I have to translate them back into all-in numbers for you to use.

The all-in graphs combine rate/mile estimates with the YOY change calculations for the all-in rates. This combination is revealing, as it shows how the rates can remain high, while giving negative YOY numbers. This is clearly seen in the spot numbers where the rates remain well above the 2016 values, despite two years of YOY shrinkage. Note that with the contract numbers, the rate/mile values continue to climb in 2020, due to the longer lags that govern contract prices. By the end of that year, they should be falling, even though the full-year average is above 2019's. You can also see in the tabular display that all the 2019 and 2020 growth comes from inflation and fuel, save for the .1 percent in 2019. The market estimates reflect the softening capacity documented in the first section of this review.

Tell us what you have told us.

In summary then, the outlook is for prices to remain above the long-run trend through 2020, although spot prices will have regressed to near-trend by the end of 2020. Contract prices will make that approach in 2021. This is a reasonable base case forecast, derived from a careful study of historical precedent. It is clearly more likely than the more optimistic assumptions that most of the industry is still making, buoyed by the good feelings (for carriers) of the past 18 months.

I'm a pessimist. Here's what the optimists say.

Of course, history may not repeat itself and produce a major step-function upward change in prices. Again, I have built a 4-percent version of such a step function. However, some commentators see it closer to 10 percent. Combine that with a Trump-like optimistic economic forecast and one could add 5-7 percent to my base case numbers. I put such a probability of less than 20 percent—non-zero for sure, but unlikely.

In 2020, I'll be an optimist again. For now, I am concerned about a downside.

I find a downside exposure more likely than an upside, especially by the end of 2020. This recovery is very old, approaching a record for length should it continue, as is likely, in 2019. We may be approaching a natural end to this recovery, a pause while people save up for the next rush of investments and spending.

In addition, growing troubles in the global economy, combined with the worrisome trade war, could retard the U.S. economy. Should the economy weaken, or go into outright recession, history suggests a regression of prices below the long-run trend. That could produce late-2020 prices 20 percent below today's levels for spot markets and 6 percent below for contract markets. Sadly, I find this exposure more likely than the upside risk, at a probability of 30 percent or more. This is why I advise you to be cautious with your cash, despite the wonderful current conditions for carriers.

ABOUT THE AUTHOR

Transportation economist Noël Perry provides insightful analysis of freight transport within North America, with special emphasis on truckload, rail, intermodal, and domestic water markets, through Transport Futures. **transportfutures.net**

Casebook | by Jennifer Baljko

Tracking Resins Avoids a Sticky Situation

Thermoplastic compounds company Aurora Plastics turns to automation for all the right resins.

In 2017, Aurora Plastics LLC moved ahead with one of the last pieces of automation required at its Streetsboro, Ohio, plant: improving how it unloaded resin from rail cars to the correct dedicated raw material silos.

With hardware from Janam Technologies LLC and a customized software application from Quest Integrated Solutions, the advanced polymer compounds developer and manufacturer eliminated time-consuming manual rail car content identification checks, improved its railyard management process, and delivered raw materials to their designated drop-off points with 100-percent accuracy.

Targeting Inefficiencies

Aurora Plastics, founded in 1997 in Streetsboro, Ohio, develops thousands of advanced polymers, custom plastics, and compound SKUs for a spectrum of markets from agriculture and automotive to HVAC, custom extrusion, and injection molding.

The company serves its global customers, the majority of whom are located in the United States and Canada, from five plants in Massachusetts, Ohio, North Carolina, Texas, and Quebec. It receives and ships raw materials in several packaging formats via truck and rail.

After implementing several IT-enabled automation solutions, the company shifted its focus to address inefficient manual processes at the Streetsboro facility.

Raw materials generally arrive at the plant in super sacks, in bulk, and in liquid bulk. The company blends the raw materials to make polyvinyl chloride (PVC) compounds, and the plant ships 500 different line items monthly. Five different types of resins account for the site's largest raw

Aurora Plastics' Streetsboro, Ohio, plant, which has the capacity to hold 18 rail cars, relies on rail transportation for raw material delivery, particularly for its five most used resins.

material usage, and it unloads more than 100 million pounds of PVC resins from rail cars annually.

Resin in Hand

Although many of the plant's other activities were highly automated, the fully manual, time-consuming process of handling resin rail deliveries, including performing multiple material quality cross-checks and off-loading the resins into dedicated silos, needed to be overhauled.

"In the past, any one of the rail cars coming into the plant could be carrying any one of five resins," says Seth Scott, Aurora Plastics' assistant plant manager. "The rail cars came in with an ID number, but that number didn't indicate the contents."

To determine the rail car's identity and contents, the raw material coordinator would walk up and down the railyard, write the rail car tagging information on paper, and cross-reference the information with the certificate of analysis (CofA) in the office. Afterwards, the operations team would double- and triple-check the rail cars and contents and ensure that they were hooked up to the right resin-storage silo.

These manual accountability checks happened several times every day because it was of utmost importance that the material was unloaded correctly into its dedicated silo.

"Unloading the resins incorrectly would contaminate the entire silo, which would then be considered nonconforming material," says Scott. "Our silos hold about 220,000 pounds.

Janam mobile readers scan RFID tags to help Aurora Plastics track rail cars and their contents.

Unloading the wrong resin to a fairly full silo essentially contaminates 220,000 pounds of good material."

That kind of offloading error comes with a high price tag.

"The potential for error was huge. As many times as we would double- and triple-check, unloading mistakes still happened at least once every year," says Scott. "Once a year doesn't sound that bad, but it's very weighted. We had to shut down the plant for the entire day to resolve the issue. During the downtime to deal with the silo contamination, we are not producing materials."

Visible Results

Besides rail car identification and correct content unloading, plant workers needed an easier and more efficient way to visually see which rail cars were in the yard at any given moment. They also needed to know when a rail car came in and was being switched out, and that sufficient quality-control tests were completed before they began resin offloading.

The plant has the capacity to hold 18 rail cars on two tracks; there are typically 16 cars in the railyard and one to five cars being sent out daily. "It's a constantly rotating process," Scott says. "A lot of moving parts have to be considered."

The looming threat of a costly error made it clear that the company had reached an "enough" point. It had to find a more efficient way to manage the resin unloading while creating more rail car and railyard visibility. The missing link was a hardware and software automation rollout.

For help, Scott turned to Quest Integrated Solutions, a subsidiary of Technology Recovery Group in Westlake, Ohio. Aurora Plastics and Quest Integrated Solutions had a 12-year history of working together on other IT, barcoding, and data-tracking projects, and joined forces again in January 2017 to tackle the rail car offloading automation program.

"Seth [Scott] came up with the idea," recalls Jack Brower, director of Quest Integrated Solutions. "He knew that we could probably incorporate the RFID tag that already existed on all the rail cars into a tracking system."

Customized Solution

Over the course of 10 months, Scott and a small team from Quest Integrated Solutions developed a 100-percent custom application to monitor inbound and outbound rail car movement and facilitate the way the raw material coordinator reported and tracked products. For the hardware portion of the solution, Quest Integrated Solutions tapped Janam Technologies LLC, of Woodbury, New York.

"We received extraordinary support from Janam," Brower says. "Before they were involved, another hardware vendor had proposed a solution, but we found that it didn't work as touted. We asked Janam for help. Within 24 hours, we had a demo unit, software support, and a solution for our customer."

Aurora Plastics now uses Janam's XM2-RFID rugged mobile computer to scan the RFID tags on the rail car. Quest programmed the device and developed a desktop application to capture railyard data and send it to Aurora Plastics' SQL database. The application stores all of Aurora Plastics' transactions and enables the company to track and report historical data.

"About six years ago, we identified that the rail market was underserved in terms of technology," says Doug Lloyd, Janam's vice president of sales. "It had been supported by old legacy products, and as devices matured and migrated to higher-end systems, more features were needed. We worked with a number of experts in the intermodal rail network, and learned about the industry's product requirements."

Janam now integrates those features into solutions like the one it developed for Aurora Plastics. "The solution is not just a simple reader; it includes an operating system to write applications to, and a built-in barcode scanner that can scan and read RFID tags in a very compact product," says Lloyd.

The customized end solution now allows the raw material coordinator to walk the railyard with Janam's

GETTING A GRIP ON EFFICIENCIES

Aurora Plastics wanted to improve and automate its rail car processes for unloading more than 100 million pounds of PVC resin annually at its Streetsboro, Ohio, plant. By deploying Janam Technologies' XM2-RFID rugged mobile computers and customized software applications from Quest Integrated Solutions, the resins maker was able to gain these supply chain efficiencies:

- Achieved a 100-percent success rate for products being delivered to the correct locations at the Streetsboro, Ohio, plant through optimized data capture performance and reliability, combined with improved rail car and resin tagging and identification.
- Eliminated manual paperwork and multiple quality cross-checks, resulting in a 20-percent time savings overall.
- Freed up about two hours per day for the raw material coordinator, allowing the company to better utilize employee labor, time, and skills.
- Improved transaction and historical data tracking and reporting, as well as communications between the raw material management, production, and operations teams as a result of integrated rail car and railway yard data sent to Aurora Plastics' SQL database.
- Increased visibility and coordination of rail cars entering, staying in, and leaving the rail yard and improved communications with the rail carrier.

For the future, Aurora Plastics plans:

- Rolling out similar RFID tagging, identification, and automation processes to its recently acquired Pasadena, Texas, facility.
- Working with Quest to develop automation and barcoding solutions for smaller projects at its Lunenburg, Massachusetts, and Streetsboro, Ohio, plants

device, use Quest's drag-and-drop software application to feed up the rail car tag information, and better cross-reference the physical car data with the CofA—a significant change from the manual process of writing down the rail car ID numbers and retyping them into the system.

Going With the Flow

Aurora Plastics has improved its overall information flow as well, both within the company and externally. The railyard data is fed to the plant's operations team, giving them a clearer view of railyard activity, material quality, and products ready for unloading.

The solution also allows Aurora Plastics to share better data with its rail carrier and improve the coordination of rail car arrivals and switches.

The most important savings is the one that is hardest to calculate: the cost of an unloading mistake that would potentially shut down the plant and render a silo's worth of resin unusable.

> **"As many times as we would double- and triple-check, unloading mistakes still happened at least once every year."**
>
> –**Seth Scott,** assistant plant manager, Aurora Plastics'

"One mistake would have paid for the project," Scott says. "We haven't had any issues. It was a successful rollout."

Other benefits have been more tangible since Aurora Plastics officially launched the Quest-Janam solution in October 2017.

Aurora Plastics' Streetsboro plant has eliminated the manual paper process used to identify rail cars and their contents, resulting in efficiency gains across its operations and a 20-percent time savings, according to Janam. The raw material coordinator alone has saved about two hours of work every day.

Improved visibility, barcode scanning, quality checks, and offloading procedures have also led the company to achieve a 100-percent success rate for products being delivered to the correct locations.

Aurora Plastics continues to work with Quest Integrated Solutions on other lower-priority projects at its Lunenburg, Massachusetts, and Streetsboro plants. However, its main investment will be upgrading its newly acquired plant in Pasadena, Texas, where it may roll out similar RFID tagging, identification, and automation processes at a later time. ■

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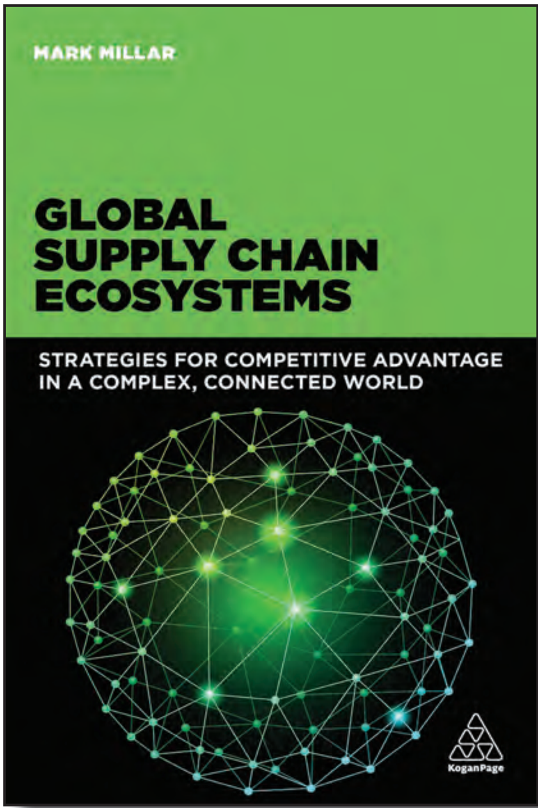

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ABOUT MARK MILLAR, MBA

Acknowledged as an engaging and energetic presenter who delivers a memorable impact, Mark has completed over 450 speaking engagements at corporate events, client functions, management briefings and industry conferences in 28 countries across five continents.

A visiting lecturer at Hong Kong Polytechnic University, industry peers recently recognized Millar as The Most Inspiring Supply Chain Professional at the 2018 Supply Chain Asia Awards.

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IT Toolkit | by Karen M. Kroll

Automated EDI Brings Benefits as Far as Eyebobs Can See

Eyebobs, a Minneapolis-based purveyor of eyeglasses and related accessories, needed a more efficient and direct way to link its enterprise resource planning (ERP) system to the many retail clients that sell its products.

A direct, automated EDI connection between its ERP system and retail partners gives eyebobs 20/20 visibility to its omnichannel orders.

The company had been using a technology solution that lacked an automatic connection. As a result, eyebobs had to complete multiple manual steps to process orders. These processes not only ate up time, but also increased the risk of errors, which could lead to chargebacks.

To improve this process, eyebobs partnered with True Commerce, a Pittsburgh-based company that offers a comprehensive commerce network and automates EDI connections between brands and their retail partners. The partnership streamlined eyebob's order processing and cut the risk of chargebacks due to mistakes.

Julie Allinson launched eyebobs in 2001 after discovering that a stylish pair of reading glasses could induce "the type of sticker shock usually associated with a luxury sports car purchase or hotel mini-bar tab," as the company's website states. The other option—drugstore cheaters—also held little appeal.

Allinson started eyebobs with a mission: to create "a line of distinctive, high-quality eyewear for people like her, the irreverent and slightly jaded," according to the website. Along with offering a selection of reading glasses online, eyebobs began offering prescription eyewear in 2017.

It has since added several retail stores, including two in Minneapolis and one at Orlando's Florida Mall, all staffed by "bobtenders." Eyebobs also sells through about one dozen major retailers, as well as boutiques.

While major retailers including Neiman Marcus, Nordstrom, Von Maur, Macy's, Bloomingdale's, and Dillard's sell eyebobs, the company has recently opened eyebobs-branded stores.

When working with many of its retail partners, eyebobs transmits transaction documents such as purchase orders, invoices, and advance ship notices through EDI. Several years ago, eyebobs was using an EDI solution that didn't integrate with its NetSuite ERP solution, recalls Susannah Kyle, director of IT. As a result, eyebobs employees had to manually rekey the orders.

Partner to Partner

Through a NetSuite user group meeting, Kyle learned that the True Commerce solution would meet the varied EDI requirements of eyebobs' retail customers. "We needed a solution that would work with the same trading partners we worked with, including boutique retailers," she says.

Just as important, True Commerce could integrate with eyebobs' NetSuite ERP, minimizing the need for manual steps. True Commerce also met the other criteria Kyle had established: solid support and reliability.

By implementing *TrueCommerce* EDI and its integrated NetSuite capabilities, eyebobs has been able to automate the processing of inbound purchase orders, as well as outbound purchase order acknowledgements, invoices, and advance shipping notices. In addition to boosting both efficiency and accuracy, the solution positions eyebobs for growth, as the company can cost effectively scale its automated operations.

True Commerce's mantra is "do business in every direction," says President Ross Elliott. In today's market, brands must use multiple distribution channels—traditional retailers, online marketplaces, and their own stores and websites—to reach customers. Most also need to handle both traditional store replenishments and drop-ship parcels, usually of one or two items, to end consumers. "We help sellers make the connections," Elliott says, whether it's for a large replenishment order or a single drop-ship package.

Similarly, many brands connect with other firms in myriad ways. They may use EDI to connect with major retailers, API to connect with online marketplaces, and connect directly through their web storefronts to reach consumers. True Commerce enables companies to review all orders, no matter how they originated, from a centralized perspective. That way, they're best able to decide how to fulfill them.

True Connection

True Commerce connects with about 92,000 retailers around the world. Its user base skews to companies of up to about $250 million in revenue, but it can scale for much larger firms, Elliott says. For its cloud-based solutions, True Commerce charges a monthly subscription fee that varies with volume and the services used. Most users also pay a setup charge.

Among other capabilities, the *TrueCommerce* solution can analyze retailers' inventory rules to determine the items they stock and those they don't. From this, it identifies the orders that need to be routed to the

SEEING IS BELIEVING

Eyebobs is seeing these benefits as a result of its *TrueCommerce* software implementation:

- Eliminates manual effort previously required to process inbound purchase orders, outbound PO acknowledgments, invoices, and advance ship notices.
- Complies with major retailers' EDI requirements.
- Integrates with its current NetSuite ERP system.
- Cuts order processing time.

manufacturer, who will ship the items to an end consumer. The manufacturer can use True Commerce's supplier portal to generate the necessary paperwork and ship the product to the consumer, while making the order appear as if it came from the retailer.

Once and Done

True Commerce can aggregate demand from various partners into a set of orders that's pushed to the company's ERP system for fulfillment. "They connect to us once and we connect everybody else on their behalf," Elliott says.

The alternative for many True Commerce users would be to establish individual connections to the various channels. For instance, some brands connect electronically to their biggest sellers, but then take a more manual approach with their smaller business partners, receiving and printing email purchase orders that they manually key into their IT systems. This takes time, increases the risk of errors, and can keep companies from effectively scaling their operations.

Because eyebobs was among the first of True Commerce's customers to work with a NetSuite ERP, onboarding the first dozen or so of its trading partners took about four to six months. Kyle and several other employees worked with each partner to obtain its EDI requirements and make sure True Commerce had the correct mapping from each store and distribution center through to the NetSuite ERP solution.

That way, when eyebobs pulled information from the trading partner into NetSuite, they were confident it would correctly create sales orders, while providing eyebobs' trading partners the information they needed to process each purchase order.

Next, eyebobs sent test transactions to its trading partners. Each partner could accept or reject the transactions, as well as provide comments. In some cases, eyebobs had to revise the transaction information—say, completing a label that hadn't been completely populated.

Eyebobs set a go-live date for each True Commerce trading partner. On that date, eyebobs stopped working with its previous platform and started working exclusively with True Commerce.

Today, eyebobs can get new customers up and running in just a few weeks, Kyle says. True Commerce implementation times typically range from about one to six weeks, Elliott notes.

The True Commerce solution meets the varied EDI requirements of eyebobs' major retail customers, and integrates with the NetSuite ERP solution. As a result, it has cut the time eyebobs had required to process orders. "It made it much faster," Kyle says. "Employees don't have to go to an outside system to enter information."

Seeing the Benefits

The benefits experienced by eyebobs include automated processing of inbound purchase orders, as well as outbound purchase order acknowledgements, invoices, and ASNs. The solution cuts order processing time, reduces chargebacks caused by error, and reduces the need to add to staff just to scale operations.

True Commerce typically saves customers between 15 and 40 percent of their time, and generates a return on investment within several months. Companies are able to redirect their employees to work that adds greater value to the organization. The visibility to incoming orders also enhances resource planning.

Eyebobs' previous order processing system "was just not efficient," Kyle says. The True Commerce solution expedites the process and provides "high touch service and support," she adds. ■

Eyebobs markets its popular reading glasses, sunglasses, and prescription eyewear to the "irreverent and slightly jaded." To drive order efficiency and accuracy, reduce manual efforts, improve scalability, and comply with retailer order requirements, the company implemented *TrueCommerce* EDI for NetSuite.

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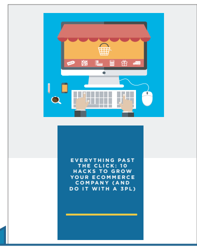

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The ultimate challenge for companies trying to remain competitive in a fast-paced distribution environment is being able to meet skyrocketing customer demands while reducing costs. That's a tough ask. Learn five tried-and-true ways to cut your supply chain costs, and how the right warehouse management system can start on the path to greater efficiency.

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When establishing your e-commerce store, it may be difficult to find time to do all the tasks that are most important—like providing customer service, marketing, packaging, shipping, order fulfillment, and other store elements. In this whitepaper, you'll learn how to optimize your online presence, find time for shipping and fulfillment, and most importantly, how a 3PL can help you amplify sales.

podcast

Jana Simmons

Bobby Holland

How Your Company Can Benefit from Freight Digitization

GUESTS: Jana Simmons and Bobby Holland, U.S. Bank

The U.S. Bank Freight Payment Index has parsed through some relevant data that heavily impacts shipping. From the threat of tariffs and autonomous technology to the capacity crunch or hurricane season in the Southeast, listen in to discover what index insights your company can use to be better prepared and optimize your supply chain.

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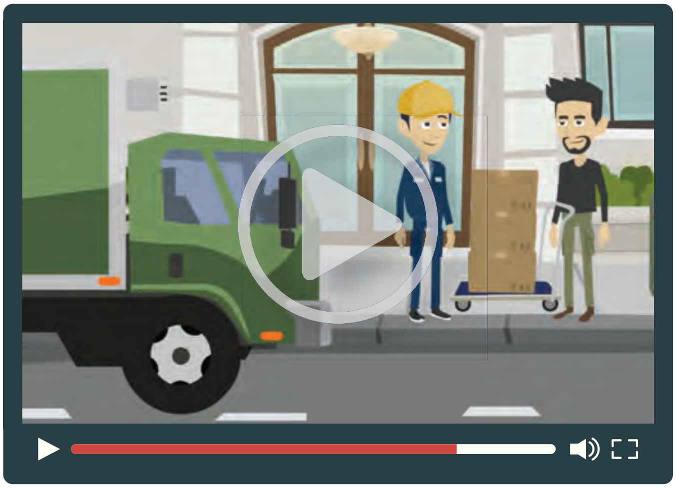
video

FORWARD THINKING ON REVERSE LOGISTICS

DM Transportation

https://reverselogistics.tips/intro

With more consumers buying online, managing returns becomes a challenge. And returns of large, bulky items are even more complex. Services like pick up, break down, and packing are just a few things to think about before the return. And after? Diverse solutions—donate, recycle, liquidate, return to the vendor or retailer—can create money-saving solutions for every situation. Check out this video to improve your reverse logistics program.



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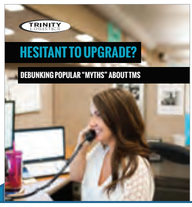

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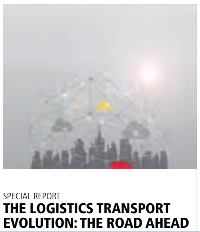
Trinity Logistics

Despite the potential for increased efficiencies and cost savings, less than half of all organizations use managed transportation solutions to handle their supply chain activities. This whitepaper debunks some common Transportation Management System (TMS) myths with a people-centric approach. Find out how combining the right people with transportation technology can deliver continuous value to your supply chain.



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The Logistics Transport Evolution: The Road Ahead

DHL

Now more than ever, ground transportation is a strategic component of business success as seen by respondents to a DHL Supply Chain worldwide survey. Three-quarters of companies surveyed indicate that investing in improving ground transportation will positively impact their sales, and they are willing to pay for and partner with 3PLs for value-added services that can show a measurable ROI.

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Whether your warehouse is just getting by with paper or spreadsheets, or you're already considering making a change, how do you really know when it's time for a new warehouse management system? Read this whitepaper to learn four key signs it may be time to upgrade to the next generation of WMS.

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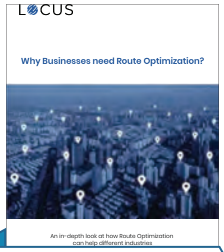

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Enhancing Container Visibility

Hub Group

To increase savings, business leaders must concentrate on the total cost of the supply chain, rather than just transportation prices. The right company acts like a business partner and takes into consideration transportation, operations, and inventory costs to help a network operate more efficiently. What is your transportation and logistics provider doing for you? What should they be doing?

Why Businesses Need Route Optimization

Locus

Route Optimization (RO) is the process of determining the most cost-effective route from Point A to Point B. However, it is not equivalent to finding the shortest distance between the two points. The best routes for business depend on a lot of different factors. Download this free guide for a comprehensive look at how RO software can take these factors into account and provide businesses with various benefits.

Generate and Communicate Actionable Visibility Data for Shippers and Receivers

Descartes

Because shippers and receivers need the ability to view, analyze, predict, and communicate the status of shipments in real time, supply chain visibility functionality has emerged as an industry requirement. Download this whitepaper to learn how to become more proactive and collaborative with inbound visibility solutions and how to leverage outbound visibility to evaluate and improve business processes.

podcast

Brian Bourke

How Your Returns Process Affects Your Retail Business

GUEST: Brian Bourke
Vice President of Marketing, SEKO Logistics

E-commerce has changed the way consumers shop and put a completely new spin on retail. To differentiate themselves in an ever-competitive market, retailers have chosen to focus on making the returns process faster and easier for consumers. But is it working? *Inbound Logistics* Publisher Keith Biondo and Brian Bourke of SEKO Logistics discuss the new retail landscape and how to have many happy returns.

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INBRIEF NEW SERVICES & SOLUTIONS

//Technology//

Supply chain solutions provider **J.B. Hunt Transport Services** is integrating **project44's** visibility platform into its 360 online load management program. The integration gives users real-time access to shipment information on a single platform across carriers.

▲ Warehouse operators can access items in hard-to-reach locations with this new range of magnetic pickup and retrieval tools from **Eclipse Magnetics**. The line includes pickup tools such as sweepers, wands, and rakes for cleaning and picking up everyday items.

Hellmann Worldwide Logistics worked with **Hanhaa Limited** to launch Smart Visibility, a new live tracking service. Smart Visibility allows users to track the location, condition, and security of their shipments via an online dashboard and e-mail notifications.

Software developer **Dynamic Systems** launched Advanced SIMBA Mobile, an application that uses barcodes to manage inventory. The application records inventory from receiving through storage and shipping, and provides users an inventory count and a discrepancy report.

E-commerce listing and order management platform **SureDone** partnered with shipping and logistics API **ShipEngine.** The partnership allows SureDone to add in-app features such as integrated label creation, rate display, and existing carrier account connection.

The **Ecomdash** inventory management platform now integrates with **Google Shopping Actions**, allowing Ecomdash merchants to manage orders, inventory, and shipping across Google's shopping channels.

New software platform **OpenDock** allows freight brokers and carriers to book dock appointments with warehouses. Users can keep a list of favorite warehouses and quickly book them again.

Worldwide shipping group **CMA CGM** is the first ocean carrier to join online comparison, booking, and management marketplace **Freightos**. The move adds online bookings, guaranteed pricing, and secured capacity on CMA CGM's United States-China shipping lanes, with more route additions planned for the future. ▼

Lufthansa Cargo expanded its digital offerings to include DGD.online, a cloud application to help shippers digitize dangerous goods processes and coordinate paperlessly with logistics providers. It's the first cargo airline to digitize dangerous goods transport documents. Shippers can use the

▲ The Joey eStep Semi–Electric Access Vehicle from **Big Joe Forklifts** is designed to improve warehouse productivity. It can lift an operator up to 42 inches while remaining in a fully enclosed compartment. Two large steel load trays on the front allow the warehouse worker to access multiple items without having to raise and lower repeatedly, and a load platform on the chassis can carry additional materials.

platform for air, road, or ocean shipments.

3PL **BlueGrace Logistics** released a new version of its BlueShip Transportation Management System (TMS) software designed to simplify supply chain management and optimization for mid-market companies. New functionality allows shippers to see real-time capacity and spot rates for volume shipments.

Tracking company **Tive** upgraded its sense and software supply chain visibility systems to include shipment data sharing, route geofences, and ocean vessel tracking. The features allow for greater collaboration between supply chain managers and logistics providers along with improved en-route inventory visibility.

SEKO Logistics partnered with web-based e-commerce shipping solutions company **ShipStation.** Merchants who use ShipStation can now connect to SEKO on the platform to improve international shipping capabilities.

Trimble and **Intelligent Audit** integrated their systems to combine real-time visibility with audit analytics tools in the transportation space. Trimble's supply chain solution will provide

Volga-Dnepr Group opened an operations base at George Bush Intercontinental Airport in Houston, Texas. The new base expands the cargo airline's operations in North and South America, where it works with shippers in industries such as oil and gas, heavy machinery, energy, and aerospace. ▼

visibility and tracking, while Intelligent Audit offers audit and spend analytics.

//Transportation//

Freight forwarding company **Davies Turner** restructured its Express China rail shipping between Wuhan, China, and the United Kingdom to minimize the number of connections and changes. The new system reduces the possibility of delays, increases security, and offers lower costs than air or sea routes.

CaroTrans and **Nordicon,** two neutral global non-vessel-operating common carriers (NVOCCs) and ocean freight consolidators, launched an enhanced weekly LCL service between New York and Helsinki. The route bypasses European gateways that would require extra freight handling, and offers end-to-end inland services at origin and destination.

▲ **Orient Overseas Container Line** (OOCL) introduced two new service routes, one between the Middle East and Indian Subcontinent and one in West Africa. The company has also improved its existing Middle East routes.

Hapag-Lloyd, Ocean Network Express, and **Yang Ming** (also collectively known as **THE Alliance**) revamped their service network for 2019, including a new pendulum service and wider range of links between the west coast of North America, Europe, and Asia. They plan to deploy more than 249 ships between 76 global ports.

NVOCC and freight consolidator **Euroconsol S.A.** conducted strategic improvements along its Silk Road LCL import rail service between Wuhan, China, and Hamburg, Germany, intended to minimize logistics delays.

Kerry Logistics expanded its freight capacity between China and South Asia seeking to reinforce its overland transportation network in the region. The company launched its first rail and road multimodal freight service between Lanzhou, China, and Islamabad, Pakistan.

LATAM Airlines Cargo flew its first direct route between Bogotá, Colombia, and Huntsville, Alabama. The new cargo route opened in December 2018, and runs once per week to reduce cargo travel time between South and North America.

//Products//

Mezzanine SafetiGates, which makes industrial safety gates that provide fall protection in warehouses, introduced power operation and technology options to its safety gate product line to add efficiencies in applications where lift trucks are transferring material to and from upper levels.

Spurred by the growth of e-commerce trade between the United States and Canada, **DHL Express** launched a new direct flight between Vancouver International Airport *(pictured)* and the DHL Express Americas hub at Cincinnati/ Northern Kentucky International Airport. The daily route increases shipment capacity and improves transit time by one hour for inbound and outbound shipments. ▶

Caster Concepts introduced the Drive Caster industrial motorized caster. It integrates an electric motor with an industrial caster into a single unit that can be attached to anything that rolls on casters, making heavy loads significantly easier to move.

Adam Equipment released a new range of Cruiser bench checkweighing scales for production, warehouse, and field use. It includes standard, high-resolution, and ultra-high-resolution readabilities from 0.0002 lb to 0.001 lb and capacities from 8 lb to 100 lb.

The Barrier Glider Cold Storage Door by **Rite-Hite** is a high-speed, bi-parting door that is ideal for refrigerated warehouses, food manufacturing/processing plants, grocery distribution centers, and other facilities that require strict environmental control. Rite-Hite's ThermalFlex Sealing System provides a heated perimeter sealing design. As a safety feature, the panels automatically reverse when they encounter an obstruction. ▼

Supply chain solutions company **Crane Worldwide Logistics** opened a new facility in Savannah, Georgia, in order to expand its East Coast operations. The facility offers FTL and LTL services, oversized/permitted loads, airfreight, ocean freight, cold chain management, and transborder services between the United States, Canada, and Mexico. ▼

// Services //

New materials handling firm **Bold** provides customized inspection services for distributors and manufacturers. The company offers site, safety, and conformity inspections as well as custom training programs and ongoing integration of new regulations.

Logistics software and supply chain solutions company **ProShip** partnered with last-mile delivery solution company **Deliv.** The move makes Deliv's same-day delivery services available to ProShip customers, along with the ability to schedule custom same-day delivery windows up to 30 days in advance.

Customs brokerage and logistics company **Willson International** expanded into Alberta with offices in Edmonton and Calgary.

This multi-scale solution from **Mettler Toledo** lets distribution centers and sorting hubs maintain high speeds, increasing throughput–processing up to 18,000 parcels per hour. The Mettler Toledo XS100 DualScale's sturdy frame and stiff conveyor body make the system less sensitive to environmental disturbances, which allows it to provide continued high accuracy at speeds up to 10 feet per second. ▼

UPS now lets its U.S. customers sell products globally with the same delivery speed as domestic shipments. Businesses that schedule a Saturday pick-up from the United States to 57 key international markets will have their shipments processed and shipped on Saturday and delivered as soon as Monday, one day faster than previous UPS time-in-transit.

PRISM Logistics opened a third warehouse logistics facility in Stockton, California, bringing the Northern California 3PL's total square footage to 1.4 million square feet in seven facilities.

Temperature-controlled third-party logistics provider **RLS Logistics** started providing national refrigerated LTL service in January 2019. The move enhances RLS's capabilities to offer both frozen and refrigerated LTL and TL services within the continental United States on a regular weekly schedule.

The new **Fairbanks Scales** AxleSurance Weigh System is designed for shippers in search of a simpler scale solution. The slow-speed system arrives pre-cast and installation-ready for shorter installation and operation times. The scale is not legal for trade, but offers a smaller and more cost-effective option for those needing to check-weigh loads, manage inventory, and reduce overload risks, providing axle and gross truck weights. ▲

▲ Marine transportation company **Alaska Marine Lines** expanded its Western Alaska service to Arctic ports, which includes two annual sealifts and routes serviced by Bowhead Transport. The new stops join Alaska Marine Lines' ports of call,including the major hubs of Naknek, Dillingham, Nome, Bethel, and Kotzebue and more than 65 villages along the coast of Western Alaska.

LOGISTICS EVENTS 2019

WHERE TO GO WHAT TO SEE

Find fellow supply chain professionals, insightful discussions, and cutting-edge solutions at this year's can't-miss events.

FEB 24-27, 2019
Orlando, FL
LINK2019: RILA's Retail Supply Chain Conference
Retail Industry Leaders Association (RILA)
bit.ly/LINK2019

This year's conference offers supply chain executives from top retailers the chance to share their expertise and boasts a new feature with the Supply Chain Innovation Awards. Attendees will focus on omnichannel fulfillment, including emerging technologies, urban fulfillment processes, and strategic relationship building with logistics service providers.

MAR 10-12, 2019
Savannah, GA
2019 IWLA Convention & Expo
International Warehouse Logistics Association (IWLA)
iwla.com

North American warehouse logistics leaders will explore warehousing innovations at the 2019 IWLA Convention & Expo. This year's theme "Your Warehouse Reimagined" focuses on helping attendees motivate employees for continued growth.

MAR 19-21, 2019
San Diego, CA
LogiMed US 2019
Worldwide Business Research
logimedusa.wbresearch.com

Both manufacturing and provider sides of the medical device supply chain can take advantage of LogiMed's strategies on end-to-end healthcare supply chain needs. The interactive conference helps identify best practices for supply chain improvement, customer service, and cost minimization.

MAR 25-27, 2019
Memphis, TN
45th Annual Conference
Transportation & Logistics Council
tlcouncil.org

"Education for Transportation Professionals," the 45th annual Transportation & Logistics Council conference is dedicated to transportation industry professionals, such as shippers, vendors, 3PLs, brokers, carriers, and more. In addition to the conference itself, three optional full-day seminars are available: Contracting for Transportation & Logistics Services; Freight Claims in Plain English; and Transportation, Logistics and the Law, all presented by transportation attorneys.

MAR 27-28, 2019
Atlanta, GA
Industrial Pack 2019
Easyfairs UK & Global
bit.ly/IndustrialPack2019

Industrial packaging companies from around the world showcase a diverse range of products, from barrels to pallets and shrink wrapping, at this two-day event. Attendees meet key industry figures and explore packaging trends such as reusability, sustainability, alternative materials, and innovation.

APR 3-5, 2019
Philadelphia, PA
Home Delivery World 2019
Terrapinn
bit.ly/homedelivery2019

The annual retail logistics conference covers parcel, heavy goods, grocery, and more, with more than 2,500 attendees participating in expert speaker sessions. Subjects range from city logistics, Uberization, and green initiatives to the death of fractured shopper marketing to the evolution of retail delivery.

APR 7-10, 2019
Houston, Texas
ISM 2019
Institute for Supply Management
ism2019.org

Supply chain and procurement professionals can attend more than 70 breakout sessions across seven tracks, take in morning keynote sessions, and meet with more than 100 supplier organizations at the Institute for Supply Chain Management's annual conference. Tracks include corporate social responsibility, digital transformation, and how to handle growing complexity.

APRIL 8-10, 2019
Tucson, AZ
ECA MarketPlace

Express Carriers Association (ECA)
expresscarriers.org/marketplace

Shippers and carriers can network and form logistical support partnerships at the ECA MarketPlace. The pre-arranged one-on-one interviews will help shippers find expedited carrier partners that provide viable supply chain alternatives. The Expo exhibition hall features the latest new technologies and other transportation services.

APR 8-11, 2019
Chicago, IL
ProMat 2019

MHI
promatshow.com

Innovators in the materials handling industry display their latest manufacturing, distribution, and supply chain equipment and systems at the ProMat 2019 conference. There are more than 1,000 solutions providers, four keynotes, and 100 floor show seminars, including new town hall style sessions on emerging technologies and sustainable facility solutions.

APR 25-26, 2019
Dallas, Texas
American Supply Chain Summit 2018

Generis
supplychainus.com

The American Supply Chain Summit focuses on collaboration around the impact of market dynamics and new technologies on supply chains and operations. Attendees examine key cases on workforce management, advanced analytics, process improvement, and automation in facilities around the world, focusing on this year's key themes of profitability and risk management; technology; cost optimization; and workforce management.

APR 28-MAY 1, 2019
Columbus, OH
WERC 2019: 42nd Annual Conference for Logistics Professionals

Warehousing Education and Research Council
wercconference.org

Logistics professionals can find ideas, knowledge, and solutions at WERC 2019. Sessions cover broad subject material, ranging from understanding cultural differences to protecting your supply chain from sabotage to facility automation, along with facility tours and peer-to-peer sessions.

MAY 13-16, 2019
Phoenix, AZ
Gartner Supply Chain Executive Conference 2019

Gartner
bit.ly/gartnerevent

This year's conference focuses on converging the physical and digital supply chains to both compete and grow in the modern era. Expert advice and networking sessions cover tracks including supply chain strategy, leadership, innovation, and planning, along with procurement, manufacturing, and logistics. Attendees can focus on the consumer-retail, healthcare exchange, industrial manufacturing, or high-tech manufacturing areas.

MAY 15-17, 2019
San Antonio, TX
NARS 2019 Annual Meeting

North American Rail Shippers Association
railshippers.com/events

Offering an infrastructure update and discussing the economic outlook, this event aims to prepare rail shippers for supply chain success. This year's program kicks off with keynote speaker Carl Ice, AAR chairman and president and CEO of BNSF.

SEPT 15-18, 2019
Long Beach, Calif.
Intermodal Expo 2019

Intermodal Association of North America
intermodalexpo.com

Intermodal industry professionals can focus on key issues facing the intermodal supply chain, including carriers, 3PLs, marine terminals, manufacturers, and more. Both experienced and early-career professionals speak with exhibitors and industry experts to see the products and trends affecting the future of the industry.

SEPT 15-18, 2019
Anaheim, CA
CSCMP EDGE 2019: Supply Chain Conference & Exhibition

Council of Supply Chain Management Professionals
cscmpconference.org

More than 100 sessions cover real-world strategies for supply chain transformation during this conference. Across three days, attendees hear from academics and supply chain practitioners and explore the Supply Chain Exchange Exhibition, where technical experts offer their specialized expertise.

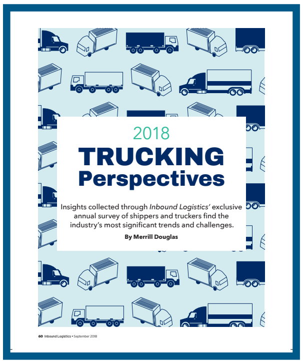
SEPT 16-18, 2019
Las Vegas, NV
ASCM 2019

Association for Supply Chain Management
bit.ly/ASCM2019

This new event evolved from the American Production and Inventory Control Society (APICS) convention, expanding the conference for broader-reaching supply chain organization. Participants focus on the accelerated pace of change in supply chain across topics ranging from inventory and materials management to robotics and virtual reality.

The 10 Most Read Articles of 2018

This content on the *Inbound Logistics* website grabbed your attention and got you clicking. From the latest trucking trends to the ins and outs of a demand-driven supply chain, here's the content that generated the buzz.



2018 Trucking Perspectives

September 2018

1 Shippers and carriers face the challenges of rising transportation costs and tight capacity, but see the economy continuing to trend upward in our 2018 Trucking Survey.

bit.ly/2018truckingperspectives

2

Send It Back! How to Manage E-Commerce Returns

August 2018

E-commerce customers return nearly one-third of their purchases. To compete and manage their own margins, e-commerce companies need to master both sending products out and bringing them back in.

bit.ly/e_returns

Continuing Education: What's on the Menu?

December 2018

3

In the ever-evolving world of supply chain management, learning can take place both on and off the job. Companies are expanding their training options with an array of online and offline continuing education programs.

bit.ly/buildEDU

4

Project Runway: Airfreight Forwarders Model New Service Collections

November 2018

Airfreight forwarders are designing an expanded portfolio of supply chain services and strutting their stuff online. The data they provide may help shippers improve their own supply chains and allow them to face new regulations in stride.

bit.ly/airfreight2018

5

3PLs Put on the White Gloves

July 2018

To stand out in the crowded marketplace, third-party logistics (3PL) providers are stepping up their service game. Learn how 3PLs are giving customers the VIP treatment, whether they're predicting future challenges or providing constant communication.

bit.ly/3PLswhiteglove

8

Technology Fuels Truckload Transport

March 2018

Full truckload fleets face challenges too, mainly the speed of information communication and visibility that is becoming increasingly important. Many truckers are turning to technology to provide that transparency.

bit.ly/techfuel

Robots in the Supply Chain: The Perfect Employee?

April 2018

6 In the face of increasing e-commerce sales and decreasing potential employee pools, many companies are turning to robots to help manage their warehouses. The robots are designed to do the least-appealing jobs in the supply chain—taking over picking, product movement, or both—boosting productivity and freeing human employees for more complex tasks.

bit.ly/botsinSC

9

Facing the Crowd

October 2018

Leverage the input of the masses with a variety of crowdsourcing strategies. Online platforms allow companies to get crowdsourced opinions on early-stage products, while others aggregate trucks with available shipment space or find last-mile delivery drivers.

bit.ly/SCcrowdsourcing

10

A Blockchain Reality Check

July 2018

With blockchain being touted as the solution to supply chain visibility, what role will it actually play in the near future? Companies should ask themselves a series of questions to determine whether blockchain is useful for them.

bit.ly/blockchainforreal

7

Supply Chain Impatience: No Time to Wait

January 2018

Increased consumer demand for efficiency and overnight deliveries is echoing down the supply chain. Some retailers are switching to regional or local delivery models to speed their processes, with the help of 3PLs, courier services, and new technology.

bit.ly/cantwaitSC


READY TO DOMINATE YOUR COMPETITION?
Get the new groundbreaking book written by a logistics industry expert that highlights how the best companies become dominant and why they succeed
"A great guideline for start-ups and established organizations alike to prioritize key objectives and set the future direction of a company" –Larry Deleo, CEO of Pacejet Logistics
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Atlanta Bonded Warehouse Corporation pg. 149
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FLS Transportation pg. 115
flstransport.com 855-297-9197
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2019 LOGISTICS PLANNER

GETTING THE MOST OUT OF YOUR LOGISTICS PLANNER 2019

The Planner edition provides you two types of information: creative and directive.

CREATIVE

The creative portion contains more than 200 pages of need-to-use content, including 18 pages of tips for amping all aspects of supply chain operations. For practical how-to advice, this edition includes 20+ articles to help you generate even more demand-driven excellence. All the content is designed to provide new and innovative ways for you to speed product flow efficiently, reduce inventory and investments in supporting infrastructure, and better match your inbound flow to demand from your customers.

DIRECTIVE

The practice of demand-driven logistics reaps many rewards, but it is not easy. That's where the second part of this Planner edition comes in—directing you to logistics leaders. The companies profiled are leaders in their quadrant, primarily because they understand the importance and difficulty of practicing demand-driven logistics. More importantly, they have made all the investments in solutions and messaging to provide the information you need to succeed.

On Demand, Any Way and Anywhere You Want It

1

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2

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Use the mobile or web version on your smartphone. You'll find the web version at the URL above. Search for the mobile app versions in the Google and Apple marketplaces.

3

PORTABLE DIGITAL PLANNER

For a searchable archive of every Planner Profile, load up your tablet and take it with you. You can even upload the Logistics Planner to your Google or Apple bookshelf by using the Planner PDF link found below.

inboundlogistics.com/digital

inboundlogistics.com/planner

4

WEB PLANNER

Available all year at the URL above. The Profiles include videos, podcasts, and social media streams.

Use the Planner to find the companies best suited to help you optimize your transport and logistics operations. Readers tell us they refer to the Planner Profiles when voting for the Top 10 3PL Readers Choice Awards, and many of the companies profiled are Top 100s in their field.

WATCH FOR PLANNER PROFILE ANNOUNCEMENTS ON OUR BUSINESS NETWORK ON LINKEDIN, TWITTER, AND FACEBOOK.

A.N. Deringer, Inc.

Jake Holzscheiter
President and CEO

Services:
- Customs Brokerage
- Freight Forwarding & Logistics Solutions
- Customs & Trade Consulting
- Warehousing & Distribution
- USDA Meat Inspection

Over 30 offices located from Maine to Blaine, WA and key air and vessel ports throughout the US.

INBOUND LOGISTICS TOP 100 3PL PROVIDER 2018

DERINGER
Managing Your Logistics / Maximizing Your Opportunities

A.N. Deringer, Inc.
64 North Main St.
St. Albans, VT 05478
Tel: 888-612-6239
www.anderinger.com

Deringer provides Customs brokerage, freight forwarding, Customs and trade consulting, warehousing and distribution, and meat inspection services. Maintaining local representation at major ports, strategically located along the northern border and at major air and vessel ports nationwide, customers are provided with a single point of contact. A flat organizational structure allows easy access to our President and leadership team. Moreover, Deringer's culture includes a strong commitment to the ongoing success of our business partners. Welcome to the Deringer Difference.

Deringer's Customs Brokerage Services

We have 100 years of experience, and our longevity in the industry means customers benefit from the expertise, service, and innovation that comprise the Deringer brand. When choosing a Customs broker, consider that we are renowned as a forerunner of many new and developing trade programs. Members of Deringer's leadership serve on various US Customs & Border Protection and trade association boards and committees. Customers benefit directly from these partnerships as they are kept current on the most pressing trade regulations. Additionally, we custom fit our solutions to each unique client. That's why Deringer has a 99% retention rate among our Top 500 customers, with less than 1% leaving due to customer service-related issues.

Deringer's Freight Forwarding Services

Facilitating the movement of goods throughout the world since 1919, Deringer is an IATA licensed cargo agent, an FMC licensed ocean transportation intermediary, and an NVOCC. Deringer arranges and manages freight forwarding, consolidation, deconsolidation, and distribution of freight throughout its journey. Offering LCL and FCL transportation, we scale services to fit clients' needs. Partnering with Deringer for Customs brokerage and freight forwarding means a seamless delivery and reduced risk of demurrage, detention, and document transfer fees.

Deringer's Consulting Group

Deringer Trade Advisory Group (TAG) supports clients by providing a full complement of import and trade consulting services. We partner with our clients to develop effective and sustainable import compliance programs. These programs reduce the risk of regulatory penalties and seizures, optimize the management of duties and fees, and improve process efficiencies and predictability. We assist clients with CTPAT certification, provide customized training and guidance on classification, valuation, and country of origin determination, as well as prepare binding rulings and prior disclosures on their behalf. Additionally, our group supports customers in finding cost savings by identifying special trade program eligibility and managing duty refund programs.

A3 Freight Payment

A3 Freight Payment creates managed, customized freight payment solutions for large volume shippers. Our solutions automate transportation payables, ensure accurate billing, integrate advanced payment options, and provide detailed reporting for the supply chain and finance professionals within your company.

Headquartered in Memphis, A3 Freight Payment is led by an experienced group of industry veterans who have designed, implemented, and managed global freight payment solutions for some of the largest shippers in the world.

Our solutions incorporate the best practices gathered from industry experts who have worked with multiple freight payment providers and hundreds of Fortune 1000 customers. We are experts at freight payment...it's our sole focus and core competency.

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Blog

A3 Freight Payment tailors all aspects of a custom freight payment solution to build a unique solution specific to your needs including:

- Invoice Automation
- Invoice Validation
- Data Capture
- Rate & Service Audit (pre and post)
- Cost Accounting
- Exception Management
- AP Automation
- Business Intelligence
- Systems Integration

Companies choose A3 Freight Payment because of our:

Business Strategy – One of a select few, not one in a million

A3 Freight Payment partners with large volume shippers who seek a high degree of customization, exceptional customer service, reliable processing, and minimum resource involvement in managing their solution. This strategy promotes a flat org structure, controlled growth, equal prioritization of customers, and scalability of operations.

Approach to Processing – A different approach, a better result

The A3 Freight Payment solution incorporates the best practices gathered from industry experts who have worked with multiple freight payment providers and hundreds of Fortune 1000 customers. Our unique processing model provides a managed solution that eliminates the pitfalls associated with traditional freight payment solutions and provides 100% transparency to you, to our staff, and to your logistics providers.

Customized Solution – One solution does NOT fit all

Your company has internal systems and processing constraints that are unique to your business. A3 Freight Payment partners with you to understand your unique needs and develop a custom and flexible solution that incorporates best practices while working within your constraints.

Dedicated Resources – A truly managed outsource solution

Each A3 Freight Payment client has a dedicated, experienced team of resources led by an Account Manager who is the single point of contact for you. The account manager and their team are empowered to tap into company resources to meet the needs of the client and are solely accountable for management of all processes. This "team concept" provides you with exceptional customer service and produces a truly managed solution.

Experience – Our knowledge ensures a smooth transition

The A3 Freight Payment team has a track record of designing, implementing, and managing global freight payment solutions for some of the largest shippers in the world. This experience is crucial to the successful development and deployment of a solution while ensuring a smooth transition for you.

a3 freightpayment

Alliance Shippers Inc.

Services and Solutions:

- The Perfect Shipment® Program
- Intermodal: USA, Canada and Mexico
- Over-the-Road Transportation
- Critical Capacity Solutions
- International Transportation Service
- Temperature Control
- Warehousing and Distribution Services
- Dedicated Fleet

Founded in 1977, Alliance Shippers Inc. has grown to become one of the largest privately owned providers of global shipping services. With a range of divisions—from temperature control to intermodal rail services—Alliance Shippers Inc. can combine a number of services for each customer. By tailoring services and customizing routes and shipping methods, Alliance Shippers Inc. ensures efficient and cost-effective transportation.

While offering worldwide shipping services, Alliance Shippers Inc. is best known for its absolute dedication to customer service. From the sales level to operations—every customer receives dedicated resources and personnel. At Alliance Shippers Inc., quality assurance specialists and communications experts manage the very latest shipping and tracking technologies to ensure that customers have instantaneous access to the information they need.

All of these factors drive Alliance Shippers Inc. to provide The Perfect Shipment® for every single customer. It's Alliance Shipper's trademarked commitment to provide four clear aspects to each shipment:

- Pick up the shipment on time
- Deliver the shipment at the time requested
- Deliver the shipment without exception
- Provide an accurate freight bill

Every shipment at Alliance Shippers Inc. is tracked automatically by a proprietary and state-of-the-art computer system. Multiple measures and checkpoints, from origin to destination, help guarantee on-time pickup and delivery. Whether at the origin, on the rail, on the highway or at the destination dock, Alliance Shippers Inc. keeps track—so their customers can keep on schedule.

As an early supporter and currently certified member of the EPA's Smartway program, Alliance Shippers Inc. is committed to responsible environmental practices, which includes maximizing fuel efficiency. Alliance Shippers Inc. understands that smart business methods are not only good for the environment—but also good for their customers' bottom line.

Alliance Shippers Inc. believes it is one thing to promise high standards. It is something quite different, however, to commit to excellence by monitoring and grading yourself with serious performance metrics. At Alliance Shippers Inc., it's a standard practice. By consistently monitoring, measuring and modifying its services, Alliance Shippers Inc. is committed to constant improvement.

ALLIANCE shippers inc.®

Alliance Shippers Inc.
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Englewood Cliffs, NJ 07632
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info@alliance.com
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Amber Road

Jim Preuninger
CEO

Amber Road's (NYSE: AMBR) mission is to dramatically transform the way companies conduct global trade. As a leading provider of cloud-based global trade management (GTM) software, trade content and training, we help companies all over the world create value through their global supply chain by improving margins, achieving greater agility and lowering risk. We do this by creating a digital model of the global supply chain that enables collaboration between buyers, sellers and logistics companies. We replace manual and outdated processes with comprehensive automation for global trade activities, including sourcing, supplier management, production tracking, transportation management, supply chain visibility, import and export compliance, and duty management. We provide rich data analytics to uncover areas for optimization and deliver a platform that is responsive and flexible to adapt to the ever-changing nature of global trade.

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Blog

Global supply chains, varying labor rates, uncertain transportation costs, and last-mile delivery challenges combine to create new complexities for today's companies. Add shifting trade policies, consumer consumption patterns and global tensions to the mix, and we see a perfect storm of uncertainty and risk that companies doing business in the global trade arena will need to overcome.

Global trade will continue to be marked by uncertainty for the foreseeable future. However, the results of this research suggest that firms will continue to leverage technology to outperform competitors in any environment. Supply chain digitization enables companies to minimize risk while achieving end-to-end visibility, improved efficiency, and cost reductions. The best technology stacks involve digitizing as much of the supply chain as feasible, yet the "right" stack will differ from company to company. Although finding the right stack might sound daunting at first, this task should be seen as a way to spark your company's innovativeness in finding new ways to compete and win.

Amber Road helps companies transform their global supply chain to improve margins, enable agility, and reduce risk. We increase operational efficiency, reduce direct costs, and create a faster, leaner, more agile supply chain. We streamline the global supply chain through digitization, which allows for collaboration, automation, analytics, and flexibility.

Our global supply chain solution is a cloud-based platform that plans, optimizes, and executes all aspects of global trade. It has the broadest functional footprint of any GTM solution in the market. Our solutions also incorporate in-house sourced, country-specific regulatory trade content, gathered, interpreted, and updated on a daily basis by Amber Road's seasoned trade professionals.

Our GTM software suite is comprised of solutions to automate and manage business processes for:

- **Global Sourcing:** Streamline real-time visibility and improve collaboration with multi-tier trading parties to improve the planning, forecasting, and raw material reservation processes.
- **Risk & Quality Management:** Accurately determine that all trading partners are in compliance with regulatory requirements and corporate standards defined for social compliance, product safety, and quality that reflect the importance of the brand.

- **Production Management:** Achieve greater visibility and control, become more agile and competitive, and reduce sourcing costs across the board.
- **Transportation Management:** Identify and remove inefficiencies resulting in shorter cycle times and less variability, helping companies reduce transportation costs, while improving service levels and transit times.
- **Supply Chain Visibility:** Connect importers and exporters with their overseas suppliers, logistics providers, brokers, and carriers.
- **Export Management:** Automate the end-to-end export process to reduce export compliance risks and improve export efficiencies.
- **Import Management:** Automate import activities and provide critical information for decision makers, including the data needed to measure key performance indicators.
- **Duty Management:** Simplify and automate the qualification and administration process of preferential trade programs along with managing Foreign-Trade Zones.

By digitizing, centralizing, and automating these processes, Amber Road accelerates the movement of goods across international borders, enhances compliance, and reduces global supply chain costs.

Amber Road
POWERING GLOBAL TRADE®

American Expediting Company

Victor Finnegan
Founder & CEO

At the heart of our mission is customer satisfaction. It begins with the courtesy and helpfulness of our service reps and dispatchers. It is enhanced by our convenient online ordering and tracking system. And it ends with the speed and professionalism of our couriers. Small wonder our on-time performance average is 99.3%.

We believe in treating our customers and employees with respect and integrity. It's a reflection of the pride we take in presenting solutions that work. Failure to deliver for our customers is not acceptable. That's why we bring a "We Say Yes!" attitude to our jobs each day.

Many American Expediting employees have been with our family for years. Our success depends on their skill, dedication and initiative. And as we continue to grow, we will always put our customers first. We look forward to making you our next customer.

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Blog

Logistics is not always about cargo ships from foreign lands. It is not always about fleets of dedicated 48s moving freight. Local delivery services all around the country are playing an important role.

American Expediting Company has designed a solution that meets the local, need it now, need it at an exact time, need it to a specific person, need to follow specific instructions, by building out our 40 company owned facilities throughout the U.S. as well as a dedicated and professional group of partners handling time critical needs throughout the U.S.

We are experts in the first mile, last mile, and just in time inventory aspects of logistics management. For over 30 years, American Expediting has been dedicated to handling the time critical local ground delivery needs of logistics providers and shippers.

Our Services Include:

- **Same Day On Demand:** We listen carefully to understand your exact requirements, then provide the fastest, most economical door-to-door route to make your deadline. Plus, you can monitor the progress of your deliveries every step of the way using our online Shipping Wizard.
- **Same Day Rush:** Packages are picked up within 30 minutes and delivered within 1–2 hours, based on mileage.
- **Warehouse/ Inventory Management:** American Expediting's emergency parts warehouse is the quintessential Just In Time Inventory solution. Our forward stocking locations handle anything from computer repair parts and industrial supplies to medical necessities and more. American Expediting will receive your product, manage your inventory, deliver or ship to your consignee — all on an immediate, same-day, expedited basis.
- **Fulfillment:** American Expediting's emergency fulfillment services can become an extension of your company, without the overhead of salary and space, and only when you need them.
- **Medical/Laboratory Specialists:** Our medical couriers are highly skilled, bonded and insured, and equipped as necessary with scanners, dry ice, coolers, and spill kits. They are compliant with all state and federal regulations pertaining to safe biohazards transportation.

Services are offered 24 hours a day, 7 days a week. Our technology and flexibility allow us to provide the quality of service you and your customers demand and our nationwide solution saves your valuable time and money.

American Expediting®
COURIER • TRUCKING • WAREHOUSING • LOGISTICS

Amerijet International Airlines

Derry Huff
Vice President of Sales and Marketing

"At Amerijet we focus on service and we are in constant communication with our customers to deliver what's important to them."

Our Vision/Mission

Our vision and corporate values form the foundation of the way we do business at Amerijet International, Inc. The culture of our company and the values we foster guide our relationships with our customers, vendors, and business partners.

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Phone: 305-593-5500
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About Amerijet

With more than 40 years of experience in the cargo industry, Amerijet operates its own dedicated freighter fleet of B767-300/200 aircraft from its primary hub at the Miami International Airport to 38 destinations throughout the Caribbean, Mexico, Central and South America. The company provides more main deck capacity to more destinations with more frequency than any other all-cargo operator in its service region. Amerijet's global network reaches 476 destinations in Europe, Asia, Pacific, South Africa and the Middle East with seamless and transparent transportation solutions for customers shipping time-sensitive, valuable, hazmat, temperature controlled and other commodity types.

Within the United States and Canada Amerijet can provide full truckload, less-than-truckload and expedited trucking services. Throughout the company's international service region in the Caribbean, Central and South America, Amerijet offers clearance and last mile delivery for commercial customers across many industries.

The company's new Miami facility has over 360,000 square-foot (33,500 sq. meter) import/export facility and 40,000 square-foot (3,700 sq. meter) perishable handling center providing refrigerated, frozen and chilled storage to maintain the cold chain integrity of pharmaceuticals and perishables during the transportation process. Advanced monitoring procedures, real-time shipment alerts and cargo tracking provide end-to-end visibility of every shipment.

Customized Solutions

General Cargo is a fast and reliable solution for most air freight shipments. Amerijet transports more than 136 Million Kg (300 Million Pounds) of freight through its network annually.

As the first U.S. all-cargo carrier earning IATA's CEIV-Pharmaceutical certification, Amerijet provides consistent quality services for passive, active and hazardous pharmaceuticals.

In addition to temperature-controlled containers, perishable handling centers and refrigeration facilities, Amerijet's cold chain management processes have been designed to ensure the integrity of perishable shipments.

Specialized in handling the most difficult loads, Amerijet works closely with every customer to ensure the safe and effective delivery of heavy/oversized freight and mission critical shipments.

From magnetic to radioactive, corrosive to explosive, Amerijet ensures the highest safety of the shipments and the environment. Amerijet is one of the few air cargo carriers qualified to transport all types of hazardous materials.

Transporting valuable shipments requires safe handling, trained professionals, as well as security systems and procedures that exceed industry standards. Amerijet's constant drive for excellence provides the peace of mind when shipping valuable or fragile goods.

With over 40 years of experience in transporting live animals, Amerijet's primary objective is to provide the utmost care for your animals on the ground and in the air. Animal breeders, handlers, zoos, aquariums and pet owners are among those groups who entrust their animals to the Amerijet live animal handling teams.

Amerijet offers 24-hour air charter services to support your urgent needs. These services are offered worldwide, using a variety of aircraft including but not limited to our B767-300/200 fleet.

Approved Freight Forwarders

Randy Tutor
Vice President / Director of Sales

At Approved Freight Forwarders, our expert logistics team leverages advanced technology to tailor shipping solutions that will meet and exceed your specific requirements. We work diligently to ensure that your shipment arrives on time and intact, and we keep you updated every step of the way.

IANA Intermodal Association of North America MEMBER

CSCMP Council of Supply Chain Management Professionals
Educating and Connecting the World's Supply Chain Professionals.

RILA RETAIL INDUSTRY LEADERS ASSOCIATION
Educate.Collaborate.Advocate.

Approved Freight Forwarders
14777 Don Julian Rd.
City of Industry, CA 91746

approvedforwarders.com/planner

888-679-5099

Entrusted with the World's Freight

Since 1991, Approved has been your link to the Pacific and around the world, providing ocean freight consolidations, air freight and over-the-road transport of goods and commodities. As a Top 100 3PL Provider, we are the only freight forwarder in Hawaii with terminals on all four major islands.

We handle all types of commodities and all sizes of freight for businesses and individuals. And with more than 300,000 square feet of space, our warehouses can accommodate all of your logistics needs.

Approved is a fourth-generation, family owned-and-operated company that is part of The DeWitt Companies family, an integrated network of five sister companies that provides relocation, logistics, warehousing and freight forwarding services to businesses, households and military clients all over the world. With wholly-owned assets in Hawaii, Alaska, Guam and the Mainland, our clients trust us for easy, affordable, and safe transportation of their goods.

Working Smarter for You

At Approved, one of our core values is to Work Smarter for our customers in every facet of our business, whether it's transportation, warehousing, distribution, sorting and segregating, transloading or project management.

We're proud that we recently celebrated four years without a lost time accident or injury. The average transportation and warehousing company anticipates nearly four incidents per year and we are proud to be blemish-free, all while handling millions of pounds of freight each week. By posting zeroes in the lost time column, we have saved our customers time, money and worry because a safe team equates to safe freight.

Top-tier brands rely on us for our flexibility, responsiveness, dependability and our dedication to efficiency and cost-effective operations to all points in the supply chain.

By Land, Air or Sea

Approved is an experienced, knowledgeable international 3PL offering:

- Transportation
- Warehousing
- Distribution
- Sorting & Segregating
- Transloading
- Project Management…

and much more.

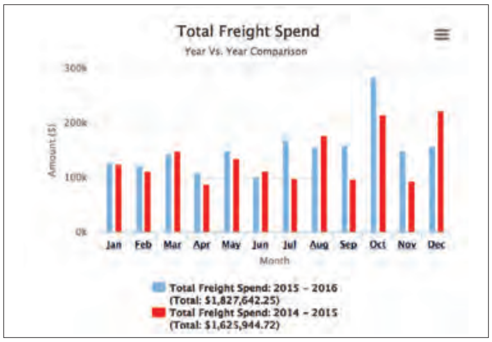
Let Approved Freight Forwarders tackle your tough logistics challenges so you can focus on your core business. Contact us today.

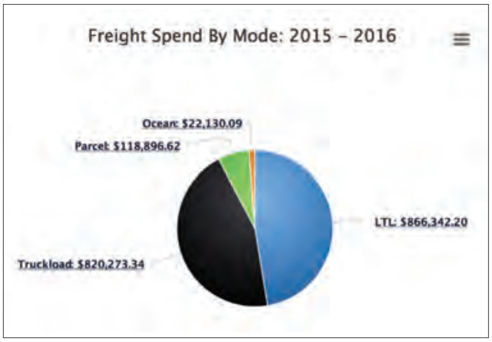
APPROVED
A DEWITT COMPANY®

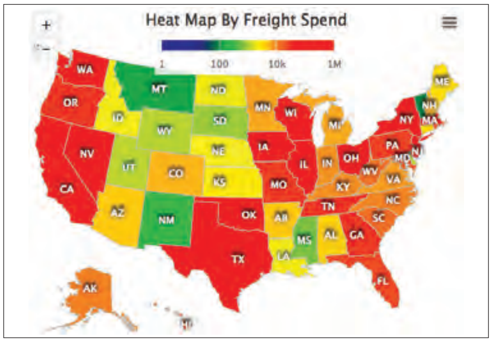
AR Traffic Consultants, Inc.

Arnold Riback
President

Mission Statement:
AR Traffic Consultants, Inc. has been dedicated to providing the finest in transportation logistics software and services since 1964. All of our products and services are designed specifically to improve the efficiency, accuracy, record-keeping, control and auditability of shipping. We provide the actionable information our clients need to lower their freight costs. Always providing top-level customer service, we are constantly upgrading our products and adding features to keep our clients ahead of the competition.







We offer a comprehensive transportation management system available both as a cloud solution and for IBM's System I (AS/400) computers. Our modules interface with many ERPs. We are also an Infor Solution Partner. Additionally, we provide third-party freight auditing and payment services as well as supporting freight rate negotiation for parcel, LTL and truckload shipments. Our cutting-edge Freight Dashboard will show you the components of your freight spend and help you determine areas for hidden savings.

You will have access to a system based upon our sophisticated, proprietary rating engine CalcRate®, capable of handling multiple rate bases, FAKs, weight breaks, discounts, absolute minimums, fuel surcharge tables and accessorial charges. Discount and floor exceptions can be entered for region, state, even down to the ZIP code level. Use the system for carrier selection, rate comparisons, mileage determinations and to streamline your freight auditing and payment. All of your freight history is stored for future analysis and auditing.

Use CalcRoute®, our advanced freight optimization module, to combine shipments from one or multiple warehouses into multi-stop truckload shipments, saving up to 40% of the cost of sending shipments separately. You can also use this tool for pool distribution and parcel zone skipping.

Use the freight analyzer to determine if your warehouses are shipping by the optimal carrier and if you are shipping from your best sourcing location. See the effect that changes in the rate base, floor and discount will have on your freight spend. The warehouse relocation tool will show you the cost impact of opening a new warehouse or moving an existing one to keep up with a changing customer base.

Take advantage of using your carriers' rate bases to save over using a corporate tariff when comparing rates with the LTL Bid Analyzer. See the effect on your freight spend as if you shipped by a single carrier, used the same carrier as historically or opted for the lowest cost carrier. When you are ready, just set the new effective date and start shipping. Send truckload carriers your lanes with the Truckload Bid Analyzer, compare and load the rates you accept with the press of a button.

Free studies are available to determine the impact of utilizing a TMS value-added program.

traffic consultants inc.

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Artha Capital

Germán Ahumada Alduncin
Managing Partner, Co-Founder

Carlos Gutiérrez Andreassen
Managing Partner, Co-Founder

Industrial Product Portfolio:
- Ready to build industrial land
- Inventory buildings
- Built to Suit & Lease projects

PLATAH Industrial Park, Hidalgo, México.

Artha Capital is a diversified private equity fund focused on the origination, development, acquisition and operation of real estate properties.

Artha Capital has developed a significant portfolio of integrated large-scale projects that offer the highest quality standards worldwide. Thanks to its internal capacity and to its relations with strategic partners and government agencies of the places where it operates, Artha has become an ideal partner for national and foreign investors.

Industrial / logistics portfolio

During the past years, Artha Capital has consolidated an important and versatile industrial portfolio through aggressive development and strategic acquisitions that makes us a Proven Solution for the Industrial Real Estate Market.

With 4,200 acres of industrial land ready to build, strategically located in Mexico's main markets, Artha Capital is capable of fulfilling the requirements of world class companies, such as BMW, Michelin, Liverpool, Saverglass, Niagara, Molex, DJ Orthopedics, and Icon Aircraft.

Our portfolio is dynamically managed with the primary aim of maximizing its value added.

Artha Capital has presence in 7 states (Mexico, Hidalgo, Jalisco, Guanajuato, Baja California, Querétaro, San Luis Potosí) with 5 industrial parks and more than 3 million square feet of leasable space.

ARTHA CAPITAL

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in f Blog

FRONTIER
NAVES INDUSTRIALES

Ascent Global Logistics

Bill Goodgion
President

Mission
Ascent Global Logistics is a full service global logistics partner focused on providing clients with innovative technology, customized solutions and highly individualized service. Our team is focused on going above and beyond to optimize clients' logistics performance and accelerate growth.

ASCENT
GLOBAL LOGISTICS

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Blog

YOUR PARTNER FOR PEAK LOGISTICS PERFORMANCE

Ascent Global Logistics provides a comprehensive suite of Domestic, International and Retail Consolidation solutions. With a focus on partnership, customer service, continuing education and best-in-class technology, Ascent Global Logistics is committed to helping clients reach new heights of logistics excellence.

DOMESTIC

- Shipment, Route & Mode Optimization
- Transportation Management System (TMS)
- Carrier Negotiations
- Freight Audit & Pay
- Vendor Inbound Management

INTERNATIONAL

- Air & Ocean Freight Forwarding
- Customs Brokerage
- Regulatory Compliance Services
- Order Management & Consolidation
- Project Management

RETAIL CONSOLIDATION

- 2.5 Million Sq. Ft. of Warehousing Space
- Strategically Located Network Of Facilities
- Dry & Temperature Controlled
- Food-Grade; AIB & CGMP Certified
- Warehouse Management System (WMS)

OUR TECHNOLOGY

Ascent Global Logistics is powered by PEAK, an intuitive technology designed to help clients manage beyond logistics with access to insightful and actionable supply chain data to empower intelligent shipping decisions. From domestic to international to consolidation, PEAK enables our team and clients to make optimal and educated shipping decisions.

Our clients gain robust tools to increase supply chain visibility, receive real-time milestone alerts, monitor exceptions, communicate with suppliers and customers, access standard and customized reporting as well as quickly and easily generate shipping documents.

OUR TEAM

Our team of logistics experts is focused on premium customer service that is professional, solution-oriented and collaborative. With a team of experienced logistics specialists, we concentrate on supporting clients through continuous education and best practice guidance.

START YOUR JOURNEY

Let our team of logistics professionals, empowered by state-of-the-art technology, accelerate your climb to supply chain excellence. Contact our team to start your journey.

Atlanta Bonded Warehouse Corporation

Mission Statement
Our mission is to provide integrated warehousing, transportation, and co-packaging services to the food, pharmaceutical, and related CPG industries. Our goal is total customer satisfaction through continuous innovation in best practices and in technology by focusing on teamwork, integrity, and accountability, all in a safe working environment.

Atlanta Bonded Warehouse Corporation (ABW) has provided public and contract food-grade, dry and temperature-controlled distribution services for over 60 years. In 2018, ABW handled 6.0 billion pounds of product through 4.5 million sq. ft. of capacity in 14 food grade warehouse facilities across the southeast. This equates to 7 million pallets.

With our in-house carrier, Colonial Cartage Corporation, and our co-packaging expertise, ABW can build integrated solutions for your asset-based logistics needs in the Southeast, Southwest, Midwest, and Great Plains.

Multi-Client/Public and Contract Warehousing

Since its 1948 inception, ABW has offered multi-client/public warehousing services to its customers. Our customers from small to large enjoy the benefits of our superior customer service, strategic locations, and extraordinary attention to detail.

ABW has extensive experience operating contract (dedicated) facilities where either ABW or the customer owns or leases the facility, using either our Tier 1 WMS or the customer's proprietary system to drive any array of services required for the business application. Our operations routinely score best-in-network across multiple Key Performance Metrics and we have received numerous awards for operational excellence.

Transportation Services

Colonial Cartage Corporation, our in-house carrier, is a full service carrier providing food-grade, dry and refrigerated TL, LTL, and pool distribution services for over 60 years. Colonial provides regularly scheduled temperature-controlled LTL delivery to all points in the Southeast, Midwest, Southwest, and Great Plains, as well as truckload and plant support services throughout its service area. As an asset based provider, Colonial's Services include consolidated order selection (bulk picking) and inbound consolidation to outbound cross-dock.

Co-packaging / Re-packing Services

ABW provides co-packaging and re-packing services to many of our contract and public warehouse customers. We store and manage packaging and supplies for our customers and are able to recover a high percentage of goods damaged in transit or in need of packaging corrections.

With over two decades of secondary packaging experience, and now primary packaging experience, ABW continues to grow and develop its capabilities, co-packaging or building over 10.5 million cases in 2018. We have experience operating:

- High-capacity, high-speed baggers and cartoners
- Overwrap, shoe box, and box pack lines
- Flex lines for shelf ready displays as well as quarter, half, and full pallet displays.

What does ABW offer that others do not?

- Stability of ownership: same family for over 50 years
- A focus on our core competencies of warehousing, transportation, and co-packaging: not being everything to everybody
- A track record proving we are not interested in second place
- Long term investments in our facilities, technology, and people
- Quick decisions: change is not patient and you need answers
- Flexibility in pricing and structure: we are interested in a fair deal for a long time

Atlanta Bonded Warehouse Corporation
3000 Cobb Int'l Blvd.
Kennesaw, GA 30152
General: 770-425-3000
Sales: 678-322-3120
info@atlantabonded.com
www.atlantabonded.com

Atlantic Container Line

A Grimaldi Group Company

Andrew J. Abbott
President & CEO

Cargo capacity for ACL's G4 vessels includes:

- 420 ton quarter ramp enables load and discharge of oversized cargo
- 28,900m2 for high/heavy roll on/roll off cargo
- 1,300 vehicles
- 3,800 TEU cellular container capacity

ACL Featured Services:

- Weekly RORO Service to and from 7 North American and European Ports
- 4 weekly Transatlantic Container Services with Direct Calls at 14 Ports
- Unique ports, directly serving Baltimore, Halifax and Liverpool
- 2 UK port choices: Liverpool and London Gateway
- Fast connections to Ireland and Scotland
- Easy access to interior France and Germany
- RORO Service from North America to the Middle East, Far East and Australia

Atlantic Container Line
1-800-ACL-1235
www.ACLcargo.com

ACL's new G4 (Generation 4) fleet, the Atlantic Star, Atlantic Sun, Atlantic Sea, Atlantic Sail and Atlantic Sky have been placed in their transatlantic service. These vessels completely replace the ACL G3 fleet.

The G4 vessels are the first of their kind vessels and the largest RORO/Containerships (CONRO) ever built. They incorporate an innovative design that increases capacity without significantly changing the dimensions of the vessel. The G4s are bigger, greener and more efficient than their predecessors. The container capacity is more than doubled at 3800 TEUs, plus 28,900 square meters of RORO space and a car capacity of 1300+ vehicles. The RORO ramps are wider and shallower and the RORO decks are higher (up to 7.4 meters) with fewer columns, enabling much easier loading and discharge of oversized cargo. Emissions per TEU are reduced by 65%. The fleet continues to employ cell-guides on deck, a feature that will allow ACL to extend its enviable record. For over fifty years, ACL ships have never lost a container over the side.

The five new G4 vessels will dramatically improve ACL's competitiveness on the North Atlantic. The G4s demonstrate to our customers that our Parent Company, the Grimaldi Group, continues to do things differently than all of its competitors. We employ unique ships, go to unique ports and carry cargo that others cannot carry.

The new G4 fleet will enhance our cargo carrying capabilities. Combined with Grimaldi's ever-expanding service network, the G4s will enable ACL to provide even more services as a high quality container and RORO operator for years to come.

Since 1967, ACL has been a specialized transatlantic carrier of containers, project and oversized cargo, heavy equipment and vehicles with the world's largest combination RORO/Containerships. The Company's headquarters are in Westfield, New Jersey with offices throughout Europe and North America. ACL offers five transatlantic sailings each week and also handles the Grimaldi Lines' service between the U.S. & West Africa and the Grimaldi EuroMed Service between North America and the Mediterranean. The Company also offers service for oversized cargo from North America to the Middle East, Far East and Australia. ACL is a subsidiary company of the Grimaldi Group of Naples, Italy.

ACL

Bender Group

Steve Reid
President

Bender Group combines a small business approach with innovative and technology-based logistics solutions to help companies of all sizes improve their supply chain systems, from the manufacturing source through delivery to multiple distribution channels.

We sincerely believe in...

- Keeping our Promises
- It Ought to Be Fun to Go to Work
- Listening
- Actively seeking responsibility
- Communicating in a straight line

BENDER GROUP
Intelligent logistics for the road ahead

Bender Group
345 Parr Circle
Reno, NV 89512
800-621-9402
775-788-8800
775-788-8811
www.bendergroup.com
salesinfo@
benderwhs.com

Founded in 1945 by Edwin S. Bender in Reno, Nevada, Bender Group has over 70 years of experience in Supply Chain expertise. For almost three quarters of a century, Bender Group has provided outstanding logistics services to customers of every size and kind.

Starting with 60,000 square feet of space, Bender Group has continued to expand to over a million square feet with operations in Nevada, Virginia, and California. Bender Group offers a variety of warehouse and distribution services, international customs brokerage and freight forwarding and a complete transportation network including domestic brokerage, less-than-truckload, truckload and small parcel services.

Distribution and Omni-channel Fulfillment

Bender Group's chief focus is providing flexible distribution and fulfillment center solutions along with any related value added activities at a competitive price. We have the physical operations, information systems, customer service and expertise to handle the most complex distribution requirements including omni-channel fulfillment. With bicoastal fulfillment facilities, Bender Group offers delivery service to 99.6% of the US population within 1-3 days delivery.

Transportation

Whether you need national or regional LTL service via our core carriers, airfreight, small package carriers or are interested in private fleet conversion, Bender Group can help you organize and streamline your transportation needs to give you the cost-effective, on-time delivery of goods to meet your business needs.

International

Bender Group offers the full complement of services required to manage the global supply chain, including customs brokerage and freight forwarding, import and export services, and value-added expert consultation services. Bender Group knows what is required to navigate the ever-changing world of trade and tariffs, while helping you make the strategic decisions necessary to compete on the world stage.

Information Technology

When CIOs are surveyed on what would improve their development or supply chain process, the overwhelming answer is increased visibility throughout their pipeline. Bender Group provides you with state-of-the-art systems, order processing, and communications systems to help you maintain clear visibility of your inventory and transactions from anywhere.

Why Bender Group?

Our company culture fosters pro-activity, accountability, and execution. As a result, our logistics professionals have a deep sense of responsibility and empowerment to meet or exceed our clients' supply chain requirements. Bender Group has the agility to quickly implement intelligent ideas and technology, effectively addressing the ever changing dynamics of a company's supply chain.

Brown Integrated Logistics

Scott Shephard
CEO

Brown Integrated Logistics is the family that delivers world class logistics solutions through our subsidiaries Brown West Logistics, Brown Trucking Company, Brown Logistics Services, and Brown Fleet Services.

Brown Integrated Logistics
6908 Chapman Road
Lithonia, GA 30058
Toll Free: 1-800-241-5624
770-482-6521
Fax: 770-482-5307
brownintegratedlogistics.com

A Bridge to Capacity for Your Transportation and Supply Chain needs.

We're proud of our family of experienced professionals and our wide range of integrated services. Whether it's trucking, warehousing, brokerage, or in house maintenance, our team is dedicated to go the extra mile to get the job done with a commitment to safety, reliability, and efficiency. While our trucking services are based in the Southeast, our brokerage and warehousing divisions can handle your nationwide needs.

BROWN WEST LOGISTICS

Brown West Logistics offers more than just warehousing for your goods. We provide customized logistics solutions specifically designed to accomplish our customers' initiatives and/or supply chain challenges. Our primary differentiators are our commitment to strategic partnerships and unwavering dedication to customer service, while executing at levels that create competitive advantages for our customers.

Our Core Competency Is YOUR Supply Chain

We work with clients all over the U.S. to be the strategic partner that develops and executes solutions that are cost effective and at the highest quality - so our customers can focus on their business. Our services include solution design, warehouse selection and operations, process flow and design, warehouse management systems, and detailed reporting and visibility.

BROWN TRUCKING COMPANY

Brown Trucking provides a diverse range of truckload contract services including regional and long haul transportation with dedicated capacity options. We work with customers to solve complicated transportation and logistics challenges and deliver consistent on-time results with unparalleled, innovative and dedicated solutions. Our contract services include data analysis, load plan design, implementation and execution of strategic end-to-end transportation solutions.

Dedicated Truckload Capacity

Customers enjoy all the benefits of a private fleet without the headaches. Brown Trucking offers guaranteed internal capacity options that drive improved on-time performance and higher customer satisfaction. We provide efficient drop and hook services, and yard management optimization services with the

drivers, spotters, dispatchers, equipment, maintenance, management, and the software required so that customers get the best service and price.

Brown Trucking utilizes network optimization tools to maximize asset utilization. We also provide automated notification of pickup, departure, ETA, and delivery.

BROWN LOGISTICS SERVICES

Brown Logistics Services serves as a bridge to manufacturers, retailers and consumer packaged goods companies connecting them with non-asset and asset based capacity solutions. Our solutions include transportation management, transportation modeling, freight bill audit, dedicated and non-dedicated capacity offerings.

Transportation Management & Modeling

Brown Logistics offers customized managed transportation solutions to alleviate our customers from the burden of transportation management including access to our software systems, which provide the customer with a control tower view of their entire logistics network. We assist with the ever-changing logistics environment, with projects including consulting services and management of the RFQ process through our custom software programs.

Capacity Solutions

With capacity from our 20,000 partner carriers and sister company Brown Trucking, Brown Logistics is able to offer high quality capacity solutions based on the customer request; whether it is an expedited, high value, project based or long term dedicated needs, we have the expert network to solve them.

C.L. Services

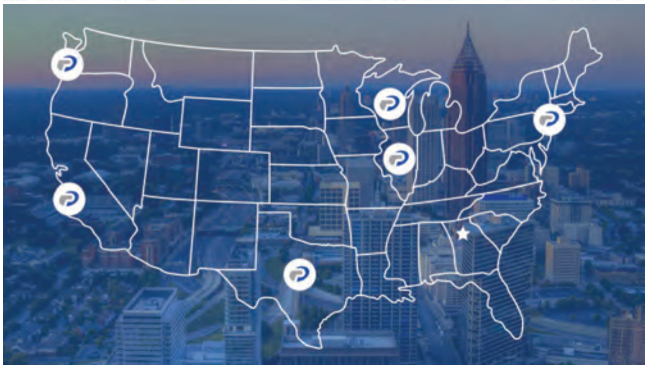
What We Stand For

In 1997, we set out to pave a new name in the transportation game. Our initial goal was to give shippers and carriers a freight brokerage service that uniquely combines the personal attention provided by a smaller brokerage with the technology and capacity of a large-scale freight management company. Today, C.L. Services continues to provide trusted transportation, while developing meaningful relationships with our carriers and customers along the way.

Our Word

C.L. Services, Inc. is under the umbrella of The Prosponsive® Logistics Group. PLG has two sides: a brokerage arm and an asset division controlling its own fleet of trucks. Together, we are a nationwide transportation provider servicing all domestic freight in the U.S., Canada, and Mexico. Our dependability, consistency, and proactive communication are the hallmarks of our company and we operate with the specific needs of our customers at the forefront.

We stand by the Prosponsive® Promise: To proactively respond and communicate quickly and honestly with all of our clients and vendors.



Knowledgeable, Accurate, Dependable + PROSPONSIVE® = RAVING CUSTOMER SERVICE

Our Credibility

SmartWay Certified: 609 of the approximately 16,700 brokers in the USA are SW certified. That makes us part of the 3.65% of brokers who are SW certified and we have been continuously since 2009, when we were part of the less than 1% SmartWay certified at that time.

- Member of TIA and IANA
- Management averages 25 years of transportation experience
- Full truckload, LTL partial, flatbed, intermodal and drayage
- Locations (*see map*): intrastate, Pacific Northwest, Midwest, Canada (esp. Toronto & BC), Mexico
- 45,000 carriers (1 year requirement, which we take very seriously)

We Stand Above the Rest

- C.L. Services, Inc. receives phone, fax, email, EDI order, or customer entry portal.
- Human touch and technology work together to verify consistent tracking of load until delivery confirmation.
- Once delivered, load is released to billing.
- Details are captured for tracking from pickup to delivery and customer self-service portal or 214 EDI updates.
- Customer Portal: Invoicing is initiated and delivered via eco-friendly EDI, ACH, email, or via paper invoices.
- Carrier is delivered full shipping and delivery instructions after compliance confirmation is received.
- Our entrusted employees maintain full visibility and control through the entire process.

C.L. SERVICES
TRANSPORT
A PROSPONSIVE® LOGISTICS COMPANY

C.L. Services, Inc.
4245 Intl. Pkwy
Suite 125
Atlanta, GA 30354
800-533-3922
678-686-0933 (Atlanta)
www.clservicesinc.com

CAI Logistics

Victor Garcia
President and CEO
CAI International, Inc.

Jason Miller
Senior Vice President
CAI Logistics, Inc.

CAI Logistics is a subsidiary of CAI International (NYSE: CAI), a global transportation company offering intermodal container leasing and sales, rail leasing and operations, and global logistics services.

The CAI Logistics Difference

At CAI Logistics, everything we do comes from our unique customer-centric approach. We listen to our customers and build real relationships. As we recognize their business needs, we find opportunities to design creative and custom solutions whether shipping goods regionally, across North America or to destinations overseas.

North American Services

Our well-established industry presence comes with a wealth of benefits including legacy railroad direct contracts, a company-owned and operated office network, and asset and non-asset-based capacity solutions.

Our TMS communicates in real-time with our transportation providers while our customer portal allows access to customized reports, billing, and other essential documents to analyze and streamline your workflow.

- Supply Chain Solutions
- Cross-dock and Transloading
- Intermodal
- Full Truckload / Less Than Truckload
- Flatbed
- Over-Dimensional
- Expedited
- Temperature Control
- Freight Management
- Quality Contract Carriers

International Services

We offer freight forwarding and NVOCC services with worldwide representation and a global agency network that moves your cargo from any place in the world, no matter how remote.

We are fully licensed and bonded with the US Federal Maritime Commission and a licensed transportation broker. We are a member of C-TPAT and are Hazardous Materials Certified.

- Import & Export
- Full Container Load (FCL)
- Less Than Container Load (LCL)
- Reefer/Perishable Goods
- Oversized Shipments
- Air Freight

CAI Logistics
866-685-7391
www.caimoves.com
#caimoves

LET'S GET MOVING!

CAILogistics

Capacity

Jeff Kaiden
Chief Executive Officer

Capacity works with brands that need value-added order fulfillment. Our passion for executing to the highest standards of excellence sets us apart from the competition.

We take an engineering-based approach to problem solving, and see innovation as an everyday resource we always have on hand.

At Capacity, it is always our mission to deliver fulfillment solutions that delight and build trust with brands, consumers, and retailers in our target markets.

Capacity fulfills tens of thousands of e-commerce and pick and pack orders daily. We can modify product, create gift sets, replace unit cartons—anything that helps our clients unlock value and delight customers. We enable clients to ship to hundreds of retail trading partners, complying with EDI and other requirements. We are an omnichannel order fulfillment provider, with decades of experience handling higher-value consumer products.

Our engineering, process-based, approach to problem solving and execution is how we deliver exceptional solutions. We design our facilities, processes, and technology with careful attention to each individual client need. Capacity's in-house teams of engineers, programmers, and operations specialists ensure we can respond in real-time to all the challenges that modern fulfillment presents.

We have on-site experts available when clients need to discuss a range of topics, from creative problem solving to supply chain challenges that occur away from our facilities. When our clients want to think creatively to improve product packaging, we are there. We have the experience, vendors, and equipment to make it happen. If our clients just want to connect about another crazy day navigated successfully, we are there. We know just how much energy goes into getting product to the end consumer. Capacity's culture of excellence is the difference that helps our clients build their brands, giving us a charge that never goes away.

If a project seems out of the ordinary, clients count on Capacity to provide the extraordinary. We do the basics well, but it's the unexpected where we truly excel. That's where we are at our best, and where our clients experience the greatest value. That's the Capacity difference. That's why our clients get what they want, when they want it, the way they want it. That's our idea of 'fulfillment delivered.'

Capacity provides global fulfillment solutions out of fulfillment centers in New Jersey, California and the United Kingdom. Our US locations are close to the largest US ports of Newark/New York and Los Angeles/Long Beach; our UK joint venture with ILG is close to London Gatwick International Airport. These strategic locations allow for reduced transit times, cost-effective shipping, and flexible transportation solutions.

CAPACITY®
fulfillment delivered.®

Capacity
1112 Corporate Road,
North Brunswick, NJ 08902
732-745-7770
inboundlog@
capacityllc.com
www.capacityllc.com

Cass Information Systems, Inc.

Cass Information Systems, Inc. is the leader in customized freight bill audit, rating, payment and business intelligence services.

Cass has the most industry experience in implementing complex processing systems that meet the unique internal requirements of large companies. Our system architecture allows us to provide customized solutions. We do not fit companies into a "standardized" system. Cass prides itself on providing system solutions that companies are unable to develop internally, or with other service providers.

In business since 1906 and processing freight invoices since 1956, Cass continues to offer stability, security, and expertise in the freight payment market.

Cass is the leading provider of freight audit, payment and business intelligence services, leveraging over 60 years of experience in providing solutions to major corporations having complex transportation payment and information needs. By understanding our customer's critical transportation and accounting processes, we provide customized business intelligence solutions that help create a competitive advantage through reduced costs, increased efficiency, and better decision making capability.

Our goal is to not just duplicate existing systems but to provide enhancements to the freight processing system that will help to maximize a customer's supply chain efficiency. Cass' team of industry experts perform an in-depth analysis of your unique needs.

Solutions

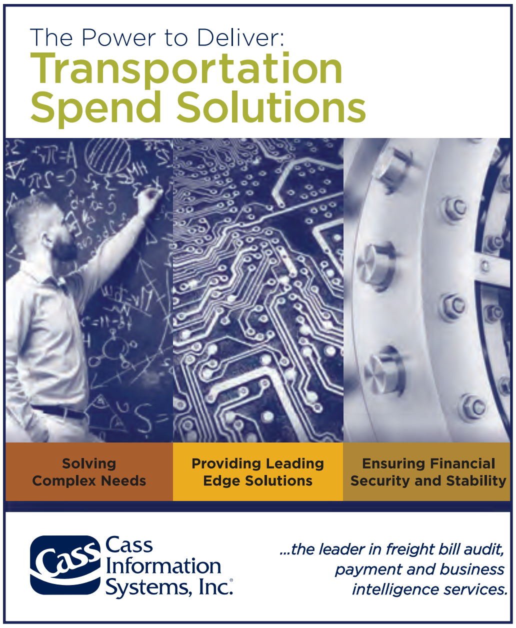
Cass offers solutions in these key areas:

- Freight bill processing and payment
- Freight bill auditing
- Freight accruals
- Freight rating
- General Ledger Accounting
- System design and development
- Electronic billing conversion
- Package level audit and reporting
- Vendor compliance reporting
- Carrier compliance reporting
- Billing procedures
- Business Intelligence
  - Standard and Custom Reporting
  - Benchmarking
  - Web-based reporting and analysis
  - Dashboards
- Carrier services
  - Freight bill inquiry
  - Exception analysis

Financial Security

Cass Information Systems Inc. is a Financial Holding Company. We are publicly held and traded on the NASDAQ Stock Market (CASS). We furnish our financial information and projections to the Securities and Exchange Commission and the NASDAQ on a regular basis.

We comply with the provisions of Sarbanes-Oxley and we make the SOC 1, Type II Auditing Standard Report available to our customers and prospective customers.



Experience and Service

We substantially invest in personnel and the required technology to ensure we provide superior customer support and service in our relationships. Our Customer Service Team includes an assigned Account Manager who manages the customer relationship with representatives from systems, operations and carrier relations. This level of customer support provides the highest echelon of quality services, and the most extensive customer oriented focus in our industry.

Global Visibility

Visibility to global transportation spend is essential for effective supply chain management. The single best source for gaining this visibility is a robust, best-practice, global freight audit and payment solution. Our global business intelligence platform provides an integrated, global view for transportation spend, usage, and trend information.

Contact Cass today to learn more about the freight audit, payment and business intelligence solutions that you can count on today and into the future.

Cass Information Systems, Inc.
13001 Hollenberg Drive
Bridgeton, MO 63044
314-506-5500
Fax: 314-506-5840
www.cassinfo.com

Cheetah Software Systems, Inc.

Jeff Groenke
VP of Sales and Implementation

Cheetah LOOP provides Live Autonomous Workflow and Asset Management of networks with thousands of on-road routes, off-road operations while adapting to on-demand live changes as orders come in. With all the related real-time communications and visibility, our customers have saved hundreds of millions of dollars in operating cost by reducing driver fleets, miles driven, fuel, dispatch and other support staff while simultaneously improving customer experience, operational reliability and standardizing the network.

The Cheetah LOOP Platform is the most powerful logistics routing platform in the industry providing consumers with accurate ETAs and instant customer notifications. Delivering live information to the right people at the right place at the right time. Businesses can hand more power to customers while creating efficiency, customer satisfaction, cut costs and cut complexity.

Cheetah Software Systems, Inc.
31280 Oak Crest Dr., Ste #3
Westlake Village, CA 91361
805-373-7111
info@cheetah.com
www.cheetah.com

Do you feel like your competition is running away from you?

Cheetah LOOP

We call our platform LOOP (Logistics Operations Optimization Platform) and it covers the Logistics space from A to Z, including First Mile, Last Mile, Healthcare, Retail, Intermodal, Courier, Delivery, Freight, Truckload and LTL, 3rd Party Carriers for Hire and Private Fleets and it both accurately and realistically models current logistics supply chains. This platform is the result of 30 years of research and development and here is what it can do for you:

- LOOP Optimization engines seamlessly guide the logistics process; Planning, dynamically managing, adapting and optimizing fleets and drivers.
- You will use less trucks, drive fewer miles and make more on-time deliveries while predicting and providing visibility on extremely accurate arrival times and ETAs.
- Plan and Adapt as orders come in, live and automatically, to changing operational conditions, including traffic, weather, accidents, customer cancellations, new stop-insertion, relays and driver exceptions.
- Customers, Store Managers and Corporate teams have a real-time, live view of the entire network and delivery performance for all customers, allowing companies to be operationally proactive rather than reactive.
- System flexibility, a plethora of data sources and live, adaptive automation make Cheetah the most advanced and efficient practical logistics platform in the market today.
- Deliver in the shortest time possible to customers for unparalleled return on investment and value for your money.

Cheetah Software Systems

Cheetah (LOOP®) is the only operations solution that not only plans delivery routes, but also predicts extremely accurate arrival times as it adapts, live and automatically, to changing operational conditions. The Cheetah platform has been successfully integrated with its customers' enterprise technology platforms supporting many different verticals.

CHEETAH Logistics Technology

CN

Keith Reardon
Senior Vice President, Consumer Product Supply Chain Growth

"We work hard with our supply chain partners to innovate, create and drive sustainable long-term growth for our customers. Whether importing, exporting or just shipping locally, we have the right people, the port and terminal partnerships in place, and the logistics expertise to keep things moving."

CN is a leader in the North American transportation and supply chain logistics industry — focused on innovation and collaboration. We offer integrated shipping solutions, including intermodal, trucking, freight forwarding, warehousing and distribution. With a rail network of 20,000 miles and 23 strategically located intermodal terminals close to major North American distribution centers — we are well placed to offer easy access to major U.S. markets and all Canadian markets.

CN is an indispensable transportation supplier for many key sectors of the North American economy, from grain and forest products to industrial and automotive products — moving raw materials and intermediate and finished goods to markets around the world. By working together with our supply chain partners we make sure our customers get their products to market as efficiently as possible — using innovative solutions that drive sustainability and ensure long term growth. CN is a true backbone of the economy; fostering prosperity in the North American markets we serve and helping our customers win in the global market place.

Whether you're shipping locally across CN's vast North American rail network, or globally through the many port gateways we service on 3 coasts, we connect you with the people that matter most — your customers.

CN
Montreal (Headquarters)
935 de La Gauchetière St. W
Montreal, Quebec, Canada
H3B 2M9
Sales: 1-888-MOVIN CN
www.cn.ca

COSCO SHIPPING Lines (North America) Inc.

COSCO SHIPPING brings the highest quality of ocean cargo transportation services to every corner of the globe, with one of the largest, newest and 'greenest' fleets making frequent and timely calls to the busiest ports worldwide. COSCO SHIPPING delivers your containerized cargo quickly, economically and securely, interfacing with rail, road, barge, air and more, with advanced equipment and technology leading the way to absolute supply chain efficiency. And, there is no other ocean carrier who knows China better.

Your China Partner

With long and detailed experience in moving cargo in and out of the interior of China, COSCO SHIPPING is your guide to selecting the right feeder services, barge, railroad, and trucking companies. With local offices and representatives positioned strategically in all of the manufacturing and production cities across China and Asia, COSCO SHIPPING can save you time, money and paperwork in getting your shipments prepared and on to port locations. COSCO SHIPPING truly is your China partner, with accurate and comprehensive advice available to you by phone, fax, web, and other sources on a real-time, around-the-clock basis. No matter if you are just beginning to trade with China or are an old China hand, COSCO SHIPPING can add value to your supply chain.

E-Lines is E-Sweet, Now Includes the New Customer Portal

COSCO SHIPPING provides you with the tools to make the shipping process seamless, easy and efficient. Our new E-lines web service helps you check routes and rates, collect details and documentation, share data, generate bills of lading, track and/or redirect inbound and outbound shipments, and maintain accurate metrics and reporting. Our E-Lines e-suite saves you time, effort and aggravation, and is backed by a global network of ocean cargo specialists ready 24/7 to assist in any part of the process. See it and try it through the new COSCO SHIPPING Customer Portal at support.cosco-usa.com

The Ocean Alliance

COSCO SHIPPING is part of the Ocean Alliance, the largest operational agreement ever made between shipping companies. With more than 40 maritime services, we will be sharing our fleet with the largest Asian shipping companies. By offering more ports and more direct calls, as well as better transit times, we will provide our customers with unmatched quality services. This new offering is a cornerstone of our strategy as it reinforces our competitiveness and strengthens our position as a key player in the shipping industry.

We Deliver Value

COSCO SHIPPING doesn't just move ocean cargo, we make moving ocean cargo a better part of your bottom line. 50 main-line services, 85 offices in 160 countries serving 1000 ports around the globe all add up to a world-class ocean carrier with world-wide capabilities. Contact COSCO SHIPPING today!

COSCO SHIPPING

COSCO SHIPPING Lines (North America) Inc.
100 Lighting Way
Secaucus, NJ 07094
866-830-2550
www.cosco-usa.com

CT Logistics

Confidence, Trust, Leadership, Traditions since 1923.

Allan J. Miner
President

The associates of CT Logistics are committed to providing superior supply chain business services and software solutions.

Our leadership has been earned with over 96 years of client confidence and trust.

ISO 9001:2015
SOC II

CONFIDENCE

CT provides more than 96 years of experience with comprehensive, broad supply chain accounting and business intelligence solutions tailored to meet your company's unique needs. We give you the confidence to trust CT, a premier provider in freight bill audit and payment, along with transportation management services. It is our desire to assist you in managing your transportation spend and data so you can focus on what matters most, which is efficiently and effectively running your supply chain management programs.

TRUST

Small firms to Fortune 100 corporations across the country, and around the globe, have trusted CT to assist them in making solid informed decisions regarding their freight bill audit and payment challenges. Our team of professionals has been instrumental in assisting our clients by utilizing our expertise and technology to maximize their ROI and provide the flexibility they need to compete in an ever-changing, global marketplace.

LEADERSHIP

CT is a leader in the freight bill audit, payment and transportation management services industry. CT's portfolio of software solutions includes: our TMS software, CTLion℠, our customized freight audit & payment system, AuditPay℠; our rating and routing program, FreitRater℠, and our exclusive shipper's co-op program, TranSaver℠. We take paths least explored to find solutions that will keep your company abreast of shifting business environments and opportunities to remain ahead of your competition.

CONFIDENCE. TRUST. LEADERSHIP. TRADITIONS SINCE 1923

They've become part of an important 96 year tradition that our clients have come to rely on when partnering with us. But just as important is the future the CT team will help you build. Our services and software are constantly evolving to provide you with the latest leading-edge tools and technology with user-friendly applications that will help manage and reduce logistics costs while adding value and more to your bottom line.

Visit www.ctlogistics.com for more information about our firm. Or call (216) 267-2000 Ext. 2190 to speak with one of CT Logistics' knowledgeable representatives regarding your company's freight transportation, logistics or global supply chain challenges.

CT Logistics
12487 Plaza Drive
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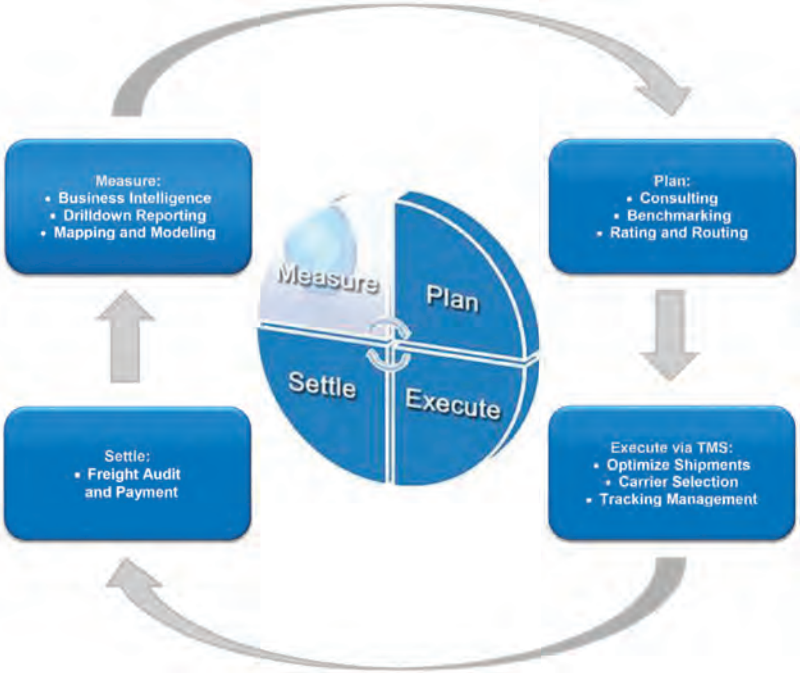
216-267-2000
sales@ctlogistics.com
ctlogistics.com

CTSI-Global

Total Logistics Technology + Intelligence

J. Kenneth Hazen
President and CEO

CTSI-Global provides global supply chain management services through experience, knowledge, and technology.



End-to-End Supply Chain Solutions

CTSI-Global processes 5 million freight transactions every day—and over $12 billion in freight dollars every year. Since 1957, CTSI-Global has provided greater insights into supply chains for improved visibility, efficiencies, and savings. Our shippers and 3PLs manage all aspects of their supply chains within one global database. In a world of complex supply chain data, go Global.

- **TMS.** Plan and execute shipments to manage orders, optimize loads, select carriers, tender shipments, manifest parcels, track shipments, and manage claims.
- **Business Intelligence.** Centralize your shipping data into one global information warehouse. Strategic Data, dashboards, and benchmarking empower you to visualize, synthesize, and analyze your data trends into actionable insights.
- **Freight Audit and Payment.** Eliminate payment errors, save time and money, and offload freight payment and contract management with advanced freight audit and payment.
- **Managed Services.** CTSI-Global is dedicated to optimizing your logistics strategy while providing full visibility as we manage the intricacies of your supply chain.

Global Vision

CTSI-Global's technology solutions automate manual processes, improve performance levels, and decrease transportation costs for national, regional, and global companies. Our solutions can be customized to each client's global business requirements, including processing currencies and languages and paying international duties and taxes. Our dedicated business analysts provide tactical support and all-inclusive business reviews.

Businesses cannot manage their transportation spend without timely, accurate, and complete visibility into their shipping costs and activities. Investing in CTSI-Global can help reduce these costs, supporting a competitive position in the global marketplace.

CTSI·GLOBAL

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5100 Poplar Avenue
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Memphis, TN 38137 USA
Phone: +1-888-836-5135
solutions@ctsi-global.com
www.ctsi-global.com

Locations:
Memphis • Atlanta • Austin • India • Ireland • Singapore

Blog

Descartes Systems Group

Edward J. Ryan
Chief Executive Officer

Mission Statement
Connecting logistics-intensive businesses in commerce by uniting the people and technology that move the world.

Descartes is the global leader in providing on-demand, software-as-a-service solutions that improve the productivity, performance and security of logistics-intensive businesses by helping companies to route, schedule, track and measure delivery resources; plan, allocate and execute shipments; rate, audit and pay transportation invoices; access global trade data; file customs and security documents for imports and exports; and complete numerous other logistics processes by participating in the world's largest, collaborative multimodal logistics community.

Descartes Routing, Mobile & Telematics™
- Optimized route planning
- Dispatching and GPS tracking
- Mobile applications
- Telematics
- Fleet/driver, compliance and performance management

Descartes Transportation Management™
- Carrier contracts
- Transportation plans across all modes (truck, air, ocean, parcel)
- Real-time freight visibility and capacity matching
- Connections to trading partners
- Control flow of prepaid freight
- Track shipments and inventory
- Audit freight
- Dock appointments and trailer movements
- Supplier/carrier performance

Descartes Global Logistics Network™
- Value-added network services
- Multimodal, inter-enterprise electronic data and document exchange
- All transportation modes and messaging standards
- Share commercial, logistics, customs and product data across systems

Descartes Customs & Regulatory Compliance™
- Cargo security screening
- Customs declaration filings and compliance
- Secure connections to governments and regulatory agencies

Descartes Global Trade Content™
- Classification
- Valuation
- Global import/export trade data for market research, sourcing and competitive strategy
- Denied and restricted party screening
- Enterprise Resource Planning (ERP) integration
- Global Trade Management (GTM) integration
- Integration with other internal systems and ecommerce platforms

Descartes Broker & Forwarder Enterprise Systems™
- Shipment management
- Transportation bookings
- Security filings
- Customs entries
- Warehousing
- Accounting

Proven Expertise

With thousands of customers worldwide, Descartes has a proven track record of helping companies drive logistics value by automating processes, enhancing service, improving profitability and ensuring compliance. Descartes' headquarters are in Waterloo, Ontario, Canada and the company has offices and partners around the world.

DESCARTES
Descartes
Sales Inquiries
International:
519-746-8110 x 202331
North America:
800-419-8495 x 202331
Email:
sales@descartes.com
www.descartes.com

DF Young

A. Wesley Wyatt
President and CEO

Mission Statement:
DF Young's mission is to always look at our clients' world through fresh eyes. With a strong commitment to our own staff that inspires creative solutions to international logistics, we set the stage for superior customer service that removes obstacles, builds trust and makes our customers' world more manageable.

DF Young Services

- Air Services
- Ocean Services
- Ground Transportation
- Customs Brokerage
- Security Management
- Documentation
- E-Business

dfYOUNG Logistics Since 1903

DF Young Inc.
1235 Westlakes Drive
Suite 305
Berwyn, PA 19312
Phone: 610-725-4000
Fax: 610-725-0570
www.dfyoung.com

Contact: Steve Giampapa
Director of Operations
610-725-4000
Steve.giampapa@dfyoung.com

DF Young brings over 100 years of experience and creative thinking to integrated logistics services and complete supply chain management. Our specialized business units:

Automotive

For 85 years we've served automotive manufacturers in NA, SA, Europe, Japan and Australia, and work closely with the largest Ro/Ro carriers. Full Electronic Interface capabilities and ISO Registration. Services are geared to:

- Prototype and exhibition vehicle shipments
- Fully- and semi-knocked down shipments
- Built-up vehicle shipments

Commercial Goods

Full front/back end services support multi-national manufacturers, international distributors, retailers and wholesalers. Includes Ocean/Air Import and Export and Import Customs Brokerage.

Front End Services:

- Import/Export flow and distribution
- Quality Assurance program

Back End Services:

- Vendor direct inventory
- Reverse logistics
- Store setup and fixtures

Supply Chain Services:

- Sole-source provider
- Just-in-time pick/deliver
- Real-time tracking
- Simplified, competitive pricing
- Consultation services
- Full logistics services
- Total Quality Assurance
- Performance metrics/reports

Food/Humanitarian Aid

As one of the world's oldest companies providing this vital global service, we work closely with international relief and U.S. Government agencies. Provide computer recordkeeping, documentation and complete logistics solution.

Foreign Military Service

As a key logistics and shipping resource for Foreign Military Sales (FMS) since the inception of the U.S. Government Security Assistance Program, we provide full service support to participating foreign countries for all material handling and shipping.

Services include:

- Air and ocean freight shipping and/or charters
- Export licensing, documentation and packing
- Explosives call forward
- HazMat processing
- Inland freight services
- Repair/return processing
- Materials tracking/tracing

Petrochemical

DF Young handles the distribution of oil well supplies and project cargoes that are purchased and shipped to major petrochemical manufacturers worldwide.

Services include:

- Charters
- Contract management
- Purchase order fulfillment
- Documentation
- Online reporting
- General and project cargo
- Hazardous materials
- Air, ocean, land and rail transportation

Pharmaceutical Sample Distribution

DF Young maintains a Dedicated Pharmaceutical Division with highly trained operations and customer service teams specializing in the pharmaceutical industry. They provide a significant cold chain and launch experience.

Services include:

- PDMA compliance
- Pharma specific packaging, labeling and transportation
- Convenient, time-specific delivery windows
- Field inventory transfers
- Agent service center providing real time status updates
- Customized reporting for all service and financial requirements
- Cold chain warehousing and storage

DHL Supply Chain

Scott Sureddin
Chief Executive Officer

A History of Innovation. We have always been revolutionizing, shaping, and simplifying the world of logistics. We're thinkers, makers and pioneers that constantly challenge what's possible.

DHL is the leading global brand in the logistics industry. Our DHL family of divisions offers an unrivaled portfolio of logistics services ranging from national and international parcel delivery, e-commerce shipping and fulfillment solutions, international express, road, air and ocean transport to industrial supply chain management. With about 360,000 employees in more than 220 countries and territories worldwide, DHL connects people and businesses securely and reliably, enabling global trade flows. With specialized solutions for growth markets and industries including technology, life sciences and healthcare, energy, automotive and retail, a proven commitment to corporate responsibility and an unrivalled presence in developing markets, DHL is decisively positioned as "The logistics company for the world."

DHL is part of Deutsche Post DHL Group. The Group generated revenues of more than 60 billion euros in 2017.

DHL Supply Chain
614-865-8500
logistics.dhl.com

Distribution Technology

(left to right): Tom, Rock, and Mark Miralia

For 50 years, Distribution Technology has been providing innovative logistics services, analytics, and guidance by focusing on the needs of their clients.

As an integrated logistics company and 3PL, Distribution Technology prides itself in offering their diverse group of clientele a complete range of management services including public warehousing, mass retail cross docking, rail consolidation/deconsolidation, contract warehousing, third-party distribution, domestic and international consolidation/deconsolidation, trucking & transportation management services and logistics consulting.

Founded in 1969 by chairman of the board, Rock Miralia, Distribution Technology operated with seven full-time employees and provided 100,000 square feet of space for contract and public warehousing in the Piedmont region. In 1988, sons Tom and Mark Miralia joined the family-owned company as staff industrial engineer and warehouse supervisor respectively.

Over the years, Distribution Technology continued to expand its services throughout the greater southeast region. Today, Tom Miralia oversees the day-to-day operations of the organization as its president and CEO.

Distribution Technology operates an approximate 1.2-million-square-foot warehousing campus and employs more than 250 people. As a privately-owned company, Distribution Technology's management team possesses an extensive background in warehousing, transportation and distribution.

The company has earned a solid reputation among its clients and other trade industries as a trusted partner in strategic planning and management expertise. Its greatest assets are its team members and associates who are committed to forward-thinking and collaborative problem solving, leading to a higher level of delivered customer value.

As a total logistics provider serving to optimize our clients' business needs, the company also operates a document storage company, re-packaging division, freight-forwarding services, trucking, consolidation, and pool distribution in support of its partners, thus enabling the company to provide a complete range of services.

Skillfully Crafted Services, Delivered.
We Are In It For The Long Haul.

Distribution
TECHNOLOGY

Distribution Technology Inc.
1701 Continental Blvd.
Charlotte, NC 28273
Phone: 704-587-5587
Fax: 704-587-5591
Email:
rcantelmo@distributiontechnology.com

DistributionTechnology.com

DLS Worldwide

Tom Griffin
President

DLS Worldwide Simplify Logistics Management with Our Leveraged Platform

DLS Worldwide optimizes your distribution and controls your costs through our spectrum of integrated services, unique sources of capacity, and global, technology-based delivery network.

Rely on DLS Worldwide for:

- Domestic LTL & Truckload
- International Air, LCL and FCL
- Expedited Air or Ground with Same Day, Next Day or Two Day Options
- White glove solutions including install & unpack, liftgate delivery and more

RRD Logistics
DLS Worldwide
1000 Windham Parkway
Bolingbrook, IL 60490
877-744-3818
www.dls-ww.com

Combine your freight volume and achieve powerful economies-of-scale

Unlock new levels of efficiency with the DLS Worldwide leveraged platform. Now your company can rely on the same resources and workflows as any Fortune 250 company managing freight volumes around the world.

Secure complete accessibility and visibility

To help you streamline transportation management and stay on top of your budget, DLS Worldwide offers cost-effective, reliable, efficient delivery methods based on your logistics needs. Our comprehensive range of services ensures a seamless, connected experience with multiple service levels, complete visibility and simplified pricing.

Whether it's transportation via air, land, sea or any combination, rely on DLS Worldwide for the best options and recommendations. Our knowledgeable transportation professionals can customize strategies for you based on your choice of carriers, locations, schedules and delivery requirements, opening new opportunities to build your business and your bottom line.

Access a far-reaching network of experts

Our proven capabilities and deep understanding of domestic and international shipping are demonstrated daily through our team of dedicated transportation specialists at more than 140 local offices across the United States. With an average of more than 15 years of industry experience, these committed professionals are on the forefront of the latest market trends and technologies and are ready to apply their exceptional skills and industry acumen to deliver outstanding service.

Be responsive and responsible

As part of RRD Logistics, DLS Worldwide is an EPA SmartWay® Transport Partner. We help you meet your sustainability goals by using best practices for:

- Saving fuel
- Minimizing engine idling
- Reducing emissions

For more than 150 years, many of the world's most storied brands have relied on RRD Logistics to connect with their customers. With DLS Worldwide, now you can too.

rrd LOGISTICS SOLUTIONS

DM Fulfillment

Greg Welchans
President & CMO

Mission: To be the preferred fulfillment partner for companies requiring fast, efficient national and international distribution, comprehensive omni-channel capabilities, the highest possible service levels and brand-building, value-add services.

At DM Fulfillment, we pride ourselves on delivering value, reliability, innovation and trust as a fulfillment partner. Our mission is to deliver an outstanding customer experience to our partners and their customers.

National and International Distribution

Our highly-automated fulfillment centers are located to reach 99% of the U.S. in one to two days via ground shipping* offering unparalleled speed to customer or shelf. Our Chicago-based Foreign Trade Zone helps save costs and improve efficiency for international needs. International shipments can reach their destination in as little as three days. Our system will optimize every order to select the best origin and carrier with the lowest freight cost and time in transit. *When utilizing all four distribution centers.

Comprehensive Omni-Channel Capabilities

Extensive integration capabilities allow you to seamlessly deliver the Omni-Channel experience. We make it easy to integrate order management systems via direct connection, webservices or through your e-commerce provider. Rest-easy knowing you'll have full EDI transaction compliance, order automation and visibility to real-time account and order information. Front-end integration is backed up by out-the-door fulfillment expertise to ensure full compliance with retail, e-tail and marketplace shipping requirements. All orders are 100% RF scanned supporting an industry-leading accuracy rate and the highest possible service levels.

Amazon and Marketplace Expertise

Capture the buy box, take control of your inventory and packaging, get discounted shipping rates and achieve Prime status*. Our integrations and expertise with Amazon and other relevant marketplaces will allow you to thrive in all channels while simplifying inventory management and streamlining operational and shipping costs to boost profitability. *When meeting qualifications.

Your Brand is Important

Reinforce your brand with custom packaging, customizable, branded pick tickets and print-on-demand, in-box marketing capabilities to deliver high impact, branded communications with your product shipments. Our full service marketing department, complete with an in-house photo studio, can provide support for your marketing and content photography needs. Let us help you promote your brand and your products with every order.

DM Fulfillment
5 Research Park Dr.
St. Charles, MO 63304
855-710-8685
www.dmfulfillment.com

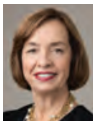
Blog

DM FULFILLMENT SERVICES
we supply trust

DSC Logistics

Ed Bowersox
President,
DSC Logistics

Sung Yup Suh
Executive Vice President,
DSC Logistics



Ann Drake
Chairman,
DSC Advisory Board

DSC Logistics, a CJ Logistics Company
DSC Logistics transforms logistics and supply chain management into a critical business strategy based on collaborative partnerships, innovative solutions and high-performance operations.

We have joined with CJ Logistics, a leading global supply chain management innovator, accelerating our transformation strategy to deliver customer value in new and expanded ways.

DSC Logistics
1750 South Wolf Road
Des Plaines, IL 60018

dsclogistics.com

info@dsclogistics.com

At DSC Logistics we are passionate about achieving our customers' business goals and maximizing the potential of their supply chains.

Partnerships. Our partnership process and framework provide a joint system that enables the dialogue, planning and process required to leverage the supply chain as a powerful medium to reach business objectives.

Our Promise. We uphold high standards of integrity, responsibility and accountability, based on open communication, collaboration and trust.

Bringing Clarity to Complexity. We transform supply chain details into tangible guiding insights. We think holistically; every solution has our customers' broader goals and the end customer in mind.

Knowing Earlier, Solving Faster. We leverage business intelligence and analytics to translate the patterns and possibilities, helping our customers assess, predict and preempt change.

Ready for Anything. Our business is based on a foundation built for flexibility; our systems and networks are modular and quickly adaptable.

Integrated Global Solutions. DSC provides global integrated supply chain solutions that combine multiple elements of supply chain consulting, logistics center management, transportation management and supply chain packaging services.

TES (Technology, Engineering, Systems & Solutions). DSC leverages systems, business intelligence and analytics to improve daily execution and drive insights that inform and advance supply chain strategies. Our end-to-end solutions feature Artificial Intelligence (AI), Automation, Big Data and Internet of Things (IoT) technologies, advanced Material Handling Equipment (MHE) such as autonomous vehicles, conveyor systems and robots, as well as industry-specific consulting expertise.

Transportation Solutions. Our transportation solutions can be integrated with logistics center management and supply chain packaging solutions. We leverage data visualization, shipment visibility and information insights to optimize transportation decisions and performance. Our modeling expertise helps customers explore scenarios, predict future costs, identify opportunities for shipment consolidation and optimize delivery routes.

Advancing progress, unlocking a greater potential. Learn more about our strategic solutions and how they can strengthen your supply chain.

dsclogistics.com/solutions

- Integrated Supply Chain Solutions
- Transportation Management
- Supply Chain Packaging Services
- Business Process Integration
- Supply Chain Consulting
- Omnichannel
- Logistics Center Management
- Business Intelligence
- Retail Consolidation + Requirements
- Technology
- International Freight Forwarding
- Asset-Based Transportation
- TES (Technology, Engineering, Systems + Solutions)

DSC LOGISTICS

Echo Global Logistics

Doug Waggoner
Chairman & CEO

Transportation Simplified

Services Offered:
- Managed Transportation
- LTL
- Truckload
- Partial Truckload
- Intermodal
- Expedited
- Small Parcel
- International Air & Ocean

Echo Global Logistics (NASDAQ: ECHO) is a leading provider of technology-enabled transportation and supply chain management services. From coast to coast, dock to dock, and across all major modes, we connect businesses that need to ship their products with carriers who transport goods quickly, securely, and cost-effectively. Echo simplifies the logistics process so our clients can focus on what they do best.

Relationships

Echo has built solid partnerships with over 50,000 carriers, creating a robust network that matches the needs of our shippers with the needs of our carriers. Our capacity and geographic coverage allow us to move 16,000 shipments every single day for our 30,000 clients.

Technology

The core of the Echo offering is proprietary technology. Quickly adaptable and highly scalable, our best-in-class technology supports the experienced Echo team in simplifying our clients' transportation and utilizing our carriers' capacity. Through technology, we ensure better data collection and transmission, seamless communication, comprehensive reporting, and real-time visibility.

Service

Above all, Echo values exceptional service in every client interaction. Our commitment to excellence and innovation, delivered by the industry's most talented transportation professionals, means we recognize that one solution does not fit all. Echo evaluates each client's transportation needs, discovers efficiencies, and delivers simplified transportation management—all with a relentless focus on execution.

ECHO Transportation Simplified™

Echo Global Logistics
600 West Chicago Ave.
Suite 725
Chicago, IL 60654
800-354-7993
Fax: 888-796-4445
www.echo.com

ElectriCities of North Carolina, Inc.

Brenda C. Daniels
Manager, Economic Development

"It's no coincidence that some of the state's most dynamic growth has occurred in our public power communities. Advanced manufacturing, food processing, metal-working, plastics–any power-intensive industry is going to find significant advantages here."

ElectriCities is a not-for-profit government service organization representing cities, towns and universities that own electric distribution systems: more than 70 N.C. cities serve 500,000 customers with 1 million customers served in N.C., S.C., and Va.

One of ElectriCities' roles is to represent member communities to expanding and relocating companies. We maintain comprehensive databases for all public power municipalities in North Carolina. Prospects can order detailed reports on dozens of sites, from mountains to coast. Within 48 hours of a request, ElectriCities will send profiles of locations that precisely match the company's specifications. "They find all the information they need in one place," says Brenda Daniels, the organization's economic development manager.

ElectriCities has recently implemented an enhanced site certification program called Smart Sites. Smart Sites are a slam-dunk choice for companies that are ready to grow now. This designation guarantees that a site has met stringent requirements and is "shovel-ready" for immediate development.

Each Smart Site has municipal electric service, water and sewer access within 500 feet, and is within five miles of an Interstate or Interstate-quality highway. Faster construction, fewer uncertainties and less risk for companies and site selectors alike.

In addition, ElectriCities offers a certified industrial park that it has dubbed a "Prime Power Park," which offers 12 MW of on-site backup power generation. The park is in the city of Albemarle, located in the Piedmont's lake country. The Albemarle park has direct rail access from Charlotte/Douglas International Airport, clearly qualifying the area as a great rail intermodal site. "If a company has a critical operation that can't risk a power outage, they have a backup available, and don't have to spend the money to purchase a generator," Daniels adds.

The Smart Sites and Prime Power Park, like the rate-lowering services to all ElectriCities' customers, provide ongoing incentives for companies looking for an ideal logistics location.

ElectriCities remains a partner through the entire site-selection process, helping companies with utility-related issues, arranging site visits, and facilitating contact with local, county and state officials.

And these companies recognize the cost efficiencies and superior customer service public power provides. Municipal utilities don't have to pay dividends to shareholders, and those savings can be passed on to the utilities' customers.

ElectriCities of North Carolina, Inc.
1427 Meadow Wood Blvd.
Raleigh, NC 27604
www.electricities.com

Brenda Daniels
Manager, Economic Development
Ofc: 919-760-6363
Mobile: 919-218-7027
bdaniels@electricities.org

ELECTRICITIES of NORTH CAROLINA, INC.
The energy behind public power

ELM Global Logistics

Bill Conboy
Founder & CEO

The most important characteristic of a 3PL is their dedication to achieving success. For over 35 years ELM Global Logistics emphasizes pride in their work, best in class performance and long term partnership relationships.

OUR 3PL = 3 SIMPLE WORDS

PRIDE, PERFORMANCE, PARTNERSHIPS ...

ELM Global Logistics is a full-service, third-party logistics provider that has been tackling unique supply chain challenges for over 35 years. Our personalized approach to all our clients' needs is what sets us apart. We provide innovative logistics solutions while offering cost-effective solutions and speed to market to our customers.

At ELM Global Logistics we offer both shared and dedicated warehousing, packaging and fulfillment services, assembly, consolidation, cross-docking and transportation services. We are the largest in-house, full service rail siding on Long Island that is connected to the freight lines of all major rail carriers. We offer creative solutions that always encompass our customers' needs, rather than trying to fit them into a standard solution.

We service a diverse group of clientele and offer a complete range of services while still offering the flexibility to customize our services to their needs. Offering customers creative solutions, rather than trying to fit them into a basic solution, has always been our strength and belief at ELM Global Logistics. We combine methodical analysis of your material flow via intelligent application of systems designed to reduce and automate every step of the process.

Founded in 1979 by Bill Conboy, ELM Global Logistics operated with just a handful of employees in about 50,000 square feet of warehouse space in Long Island, New York. Over time, ELM Global Logistics has expanded its operations and now occupies more than 1,000,000 square feet throughout the northeast region. Today, Bill continues to run the operation along with his wife, children, extended family and many dedicated employees which he feels contributes to the success and growth of this truly family-owned business.

ELM Global Logistics offers highly tailored solutions and technology that provides all customers with accurate, real-time information. It's our tightly integrated partnership approach that enables successful execution of complex supply chains within our customer base. We offer a combination of several powerful tools that can help manage your information, inventory, space and time.

Long or short term, we offer you the flexibility to grow your business which allows our customers to focus on their core business.

We put the "P" in 3PL —
Pride, Performance and Partnerships...
ELM Global Logistics, our 3PL.

INBOUND LOGISTICS TOP 100 3PL PROVIDER 2018

ELM Global Logistics
50 Emjay Blvd.
Brentwood, NY 11717
800-736-1771
www.elmlogistics.com

ELM GLOBAL LOGISTICS

enVista

John Stitz
Senior Managing Partner

Mission Statement
enVista is a leading global software and consulting solutions firm enabling enterprise commerce for the world's leading manufacturers, distributors and omni-channel retailers. enVista is uniquely experienced in both optimizing supply chain efficiencies to drive cost savings, and unifying commerce to drive customer engagement and revenue. enVista's Unified Commerce Platform, and the firm's ability to consult, implement and operate across supply chain, transportation, IT, enterprise business solutions and omni-channel, enables Tier 1 to Tier 3, omni-channel companies to leverage enVista as a trusted advisor across their enterprise.

enVista
877.684.7700
info@envistacorp.com
www.envistacorp.com

Optimize your global transportation strategy and results with enVista. We deliver leading global transportation visibility and spend management solutions that significantly improve global transportation visibility, reduce costs and maximize transportation results for the world's leading brands. Our experienced team of transportation management experts and former carrier pricing managers brings exceptional expertise to help you improve your operations and attain your goals.

Our Services & Solutions:
- Global Freight Audit & Payment
- Strategic Carrier Sourcing
- TMS Selection & Implementation
- Vendor Dropship Management
- Transportation Consulting
- Business Intelligence
- Trading Partner Management
- Network Optimization

Our Expertise:
- 1,000+ global clients across multiple industries
- $6 billion spend managed annually
- 14+ languages translated and 168 currencies on freight data platform
- Highly experienced team of transportation experts
- Inc. 500|5000 fastest growing transportation & logistics company (eight consecutive years)

enVista®
enabling enterprise commerce™

Evans Distribution Systems

John A. Evans
President

Mission:
To be a strategic supply chain partner, admired for our people, passion and innovation.

Nine Point System
1. Listen
2. Innovate
3. Communicate
4. Assign Responsibility
5. Set Standards
6. Document
7. Implement
8. Monitor
9. Review

Evans Distribution Systems helps customers enjoy a smoother glide through the supply chain by simplifying complex processes and delivering effective results. As our tagline suggests, "It's easier with Evans."

Our philosophy encompasses the idea that customer success directly correlates to how easy we make it for our employees to provide the best service possible. We're a strategic partner closely involved in our customers' supply chain decision-making, serving as their eyes and ears, anticipating supply chain challenges and proactively identifying opportunities to improve processes and increase profitability.

Heritage

From our founding in 1929, Evans Distribution Systems has evolved into a full-service third-party logistics service provider offering warehousing, transportation, packaging, inspection, and staffing services. Our extensive and diverse experience with industries including automotive, chemicals, food & beverage, retail and others provides our customers with flexible, creative solutions which enable them to become more successful. Now in our fourth generation of Evans family leadership, the company employs more than 700 associates operating in ten states including Michigan, Virginia and Illinois.

Innovation

Evans is particularly adept at meeting changing customer demands by continually investing in new technology to support transportation, warehousing, and value-added services. Our state-of-the-art WMS & TMS systems deliver real-time inventory tracking, satellite tracking, geo-fencing, customized reporting, event management, complete web visibility and some of the most flexible customized solutions available anywhere. Providing these extra services helps our customers to better utilize their own valuable resources, freeing up time they can devote to other areas of their business.

Passion

The Evans team includes many long-time, dedicated employees devoted to providing the highest quality service. This loyalty provides customers with confidence and comfort the job will be handled right, no matter what. It's a commitment that enables us to provide premium service. We have the right people, systems and programs in place at the right time, every time.

Simplified Systems

Our goal is to work seamlessly as an extension of each customer's organization. We blend our logistics expertise with the experience and knowledge of each customer to develop efficient and synchronized processes specifically designed to face the challenges at hand.

Specialized Services

- Dedicated & Multi-Client Warehousing
- Foreign Trade Zone and US Customs Bonded Space
- Transportation Management Services
- Fulfillment/e-Commerce
- Complete Local and Long-Distance Transportation Services
- Contract Packaging, Shrink Wrapping, Kitting
- Quality Inspection and Sortation Services
- Assembly, Light Manufacturing
- Testing and Rework
- Logistics Staffing Services

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sales@evansdist.com
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Blog

Evans Distribution Systems

Evans Network of Companies

Matthew "Bo" Bates
President and CEO

Mission Statement:
Our corporate mission is to continue to grow as a vital force in the transportation and logistics industry, and to provide superior logistical services and support to our customers. We are a winning team of capable leaders, associates and agent partners who respond quickly and efficiently to change and are able to adapt aggressively to the customer's needs.

Evans Network of Companies
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1-800-666-7885
Fax: 570-385-5970
kim.lorimer@evansdelivery.com
www.evansdelivery.com

The Evolution of the Evans Network of Companies

Founded in 1939 by Albert Evans Sr in Pottsville, Pa., The Network has evolved over the last three decades from an asset heavy LTL trucking operation into the largest asset light independent Intermodal drayage provider in North America. The Company has primarily been focused on building its drayage platform through service expansion and acquisitions. As of today the network has expanded operations to include brokerage, flatbed and truckload, with 600 service center locations and more than 7000 trucks. This expansion extended into employment as well, The Company now employs 400+ people half of whom are in the Schuylkill Haven corporate office. With revenues in excess of $1.2 billion, *Transport Topics*, a widely read transportation periodical ranks Evans Network as the 39th largest for hire trucking company in the United States. The Evans Network of Companies is excited to celebrate 80 years in business.

The Evans Network of Companies gives back to the community in many ways. Multiple employees are involved in local organizations such as Penn State University Schuylkill, The Schuylkill Chamber of Commerce, NEPA Logistics/Transportation Partnership and many nonprofit groups including The Walk In Art Center, Schuylkill YMCA, Vision, United way, Boy Scouts of America, local fire companies, and many other nonprofit organizations.

The Evans Network encompasses:

- Evans Delivery Co. Inc.
- 39 Transport
- 61 Transport
- All Points Transport
- Allegiant Intermodal
- Century Express
- Hale Intermodal Trucking
- Haven Intermodal
- Land Transportation
- Orion Intermodal Services
- Phoenix Transit & Logistics
- Polaris Intermodal Services
- Red, White and Blue Intermodal
- Regan Intermodal
- Sweet Arrow Trucking
- Vital Drayage
- West Contract Services of PA
- Whitacre Intermodal
- Z Intermodal
- Schuylkill Transport
- Drayage Express of Delaware
- FIT Transportation
- Commercial Transportation (CTI)
- ACE Drayage
- Madaris Transportation
- Compass Intermodal
- Pierside Intermodal
- Track Intermodal
- Catfish Container
- Madaris Logistics
- Elwood Cartage Inc.
- Phoenix
- Packard Specialized Carriers Inc.
- Newhawk Xpress
- West Motor Freight of PA
- Packard Transport Inc.
- Packard Logistics, Inc.
- Greatwide American TransFreight, LLC
- Greatwide Cheetah Transportation, LLC
- Greatwide Dallas Mavis, LLS
- Greatwide National Transportation

Evergreen Line

Mission Statement:
FULL STEAM AHEAD
Dedicated to Enriching Your Life
For 50 years and beyond, Evergreen Group has relentlessly explored more possibilities, building a comprehensive network at sea, on land and in the air.

Our pursuit of service excellence leads us to navigate our way to every corner of the world, enriching people's lives and creating a better future.

Composed of the five shipping companies of the Evergreen Group, Evergreen Line is one of the largest container carriers in the world, delivering a capacity of approximately 1,200,000 TEU. 'Evergreen Line' refers to Evergreen Marine Corp. (Taiwan) Ltd., Italia Marittima S.p.A., Evergreen Marine (UK) Ltd. and Evergreen Marine (Hong Kong) Ltd. and Evergreen Marine (Singapore) Pte Ltd. Evergreen Line was established and has grown in response to the requests and expectations of global customers and its maritime activities contribute more than $2.7 billion to the US economy.

As part of the East/West Trade OCEAN Alliance, Evergreen has the ability to provide cargo space on 350 vessels to 114 ports with 284 port calls per week. The company's global network offers 316 offices and agents located in 112 countries around the world.

The carrier has been certified by the Customs Trade Partnership Against Terrorism (CTPAT) since 2002. Since May 2004, all vessels operated by Evergreen are certified by the International Ship and Port Security for compliance. Evergreen's E-Commerce capabilities – considered among the most up-to-date in the industry – have been recognized by numerous groups and been honored for excellence for four consecutive years by Log-Net, which gathers information from carrier users.

To further enhance service quality and competitiveness, Evergreen is continuing its fleet renewal program as it continues to deploy vessels within the most suitable trades. The company recently announced it would charter twenty-four 1,800 TEU vessels, ten 2,500 TEU container vessels, and will also be building four 2,500 TEU container vessels. Introducing these new vessels will allow Evergreen to replace older tonnage currently in operation, optimizing, the efficiency of its operating fleet and enhancing its competitiveness within services. While building and upgrading its fleet, Evergreen Line intends to maintain each of the services it currently operates and will develop within new trades to meet the needs of its worldwide customer base.

Evergreen recognizes its obligation to conduct affairs constructively as a corporate citizen and has established an occupational Safety, Quality and Environmental Protection Management System for its container ships and shore-based personnel. The company is committed to being a responsible steward of our surroundings and its S-type Green Ships are outfitted with numerous features specifically designed to protect our environmental treasures. During June 2018, Evergreen Marine Corp. raised its first Green Bonds initiative, financing $65.7 million specifically earmarked for improving energy efficiencies, preventing and controlling pollution and developing strategies for a sustainable environment worldwide.

EVERGREEN LINE

Evergreen Shipping Agency (America) Corp.,
as Agent for
EVERGREEN LINE
One Evertrust Plaza
Jersey City, NJ 07302
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www.evergreen-line.com

FIBRA Macquarie Mexico

At a glance

- December 2012 global offering represented the largest North American REIT IPO since 2006.
- Portfolio of 236 industrial and 17 retail/office properties, located in 20 cities across 16 Mexican states (as of July 26, 2018). Nine of the retail/office properties are held through a 50/50 joint venture.
- Recently completed GRESB Assessment.

FIBRA Macquarie is a Mexican real estate investment trust, listed on the Mexican stock exchange (Bolsa Mexicana de Valores). It is focused on the acquisition, ownership, leasing and management of industrial, retail and office real estate properties in Mexico.

FIBRA Macquarie was established on December 19, 2012 following a successful Initial Public Offering (IPO). Since then, the firm has been active in growing our portfolio utilizing a disciplined approach.

Opportunity

We believe that FIBRA Macquarie is well-positioned to capitalize on the favorable long-term economic and demographic trends in Mexico. There are six key pillars which allow us to realize this opportunity for customers and investors:

- High quality portfolio in prime industrial and consumer markets
- Scalable internal property administration platform
- Strong track record of disciplined capital deployment
- Consistently strong operational and financial performance
- Flexible balance sheet and strong cash flow that will support future growth
- Experienced management supported by quality institutional platform

Our Team

FIBRA Macquarie is managed by Macquarie México Real Estate Management, which operates within Macquarie Infrastructure and Real Assets (MIRA). MIRA is a division of Macquarie Group and a global alternative asset manager with approximately US$119 billion in assets under management, as of 31 March, 2018, through specialized funds focused on real estate, infrastructure and other real assets.

FIBRA Macquarie is governed by a Technical Committee comprising over 80% independent committee members who have a wide variety of experiences and skills.

Sustainability

We support the communities in which we operate, and our buildings are safe and environmentally friendly. We understand the importance of maintaining a culture of transparency and a corporate governance framework that aligns the management of the business with the interests of customers and investors.

Fully committed to implementing the best ESG practices by continuing to improve and enhance our internal processes.

FIBRA Macquarie
MACQUARIE

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Col. Molino del Rey
Mexico, CDMX. 11040
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industrial.leasing@fibramacquarie.com
Retail Leasing Inquiries
+52 55 9178 7700
Retail.leasing@fibramacquarie.com
www.fibramacquarie.com

Florida East Coast Railway

Nate Asplund
President & CEO

Vision:
To be the safest, fastest growing, most intensive, and best run railway in North America.

Mission:
Offer customers superior service and creative transportation solutions to get freight delivered efficiently, on-time and with competitive value.

Leverage our unique 351-mile rail corridor to “Own Florida” – moving more freight per mile than any other North American railway, and achieving the lowest unit cost per mile in the rail industry.

Under new ownership of Grupo Mexico Transportes (GMXT), Florida East Coast Railway continues to focus on providing customers with high quality transportation solutions that connect America’s best state to the rest of the world. As the sole rail provider – operating 351 miles along the east coast of Florida – we offer intermodal, carload logistics solutions, and over-the-road trucking and we do it all in a safe, efficient, and reliable manner.

Carload

We move a variety of carload commodities, including aggregates, automobiles, perishables, packaged foods, building and industrial materials, ethanol, bio-fuels and other petroleum products, offering 12 transload facilities along Florida’s east coast.

Intermodal

Truck-like intermodal service provides shippers the convenience of door-to-door service and shipment tracing with delivery speeds that match that of trucking, but with greater reliability and reduced carbon emissions.

Over-the-Road

Our regional trucking carrier Raven Transport provides line-haul, heavy-haul and tanker transportation services for the Southeast, Mid-West and Northeast, with operating authority to service all 48 contiguous states.

Real Estate

We have multiple industrial development sites available to enhance your strategic position within Florida along our mainline track from Jacksonville to Miami, including parcels, and third party owned land and facilities.

Florida East Coast Railway
7150 Philips Highway
Jacksonville, FL 32256
800-342-1131
www.fecrwy.com

Florida East Coast RAILWAY

FLS Transport

John Leach
Chief Executive Officer

FLS TRANSPORT

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www.flstransport.com

The #1 3PL for Cross-Border Freight

... and a perfect choice for your domestic freight too!

At FLS Transportation Services, we care about your freight. It is this mindset that not only sets us apart but has also earned us a place among the Top 50 Freight Brokerage Firms in North America and the distinction as the #1 3PL for cross-border freight. Ever since our humble beginnings in 1987 in Montreal, Canada, our team of logistics experts has been driven by a single shared goal: delivering every load on time, with the least amount of headaches. It's what shippers want. It's what carriers want. And, it's what we want.

In an industry dominated by a lack of differentiation, we strive to be different with our 3x3 support; proven carrier compliance; and fair price guarantee. Our base of 12,000 carriers and 300,000 trucks ensures that we always meet this promise. 31 years, 300 employees, and 10 offices across North America later, we still take great pride in saying: **Every Load Covered. No Sweat.**

If you need freight delivered in North America contact us for a quote today!

855-297-9197 | flstransport.com

Fortigo

George Kontoravdis, Ph.D.
President

Mission
Provide logistics collaboration solutions to help customers streamline their supply chain, reduce operating costs and improve productivity.

Fortigo offers collaborative logistics services to streamline the supply chain, reduce operating costs, improve productivity and facilitate collaboration with carriers and vendors. Fortigo On-Demand TMS delivers best-in-class, carrier neutral, domestic and international shipping automation, visibility, event management and freight audit.

The Fortigo offering is based on the Software-as-a-Service (SaaS) model, accelerating implementation time while reducing costs.

For companies seeking to reduce costs, improve customer satisfaction and increase profitability, Fortigo automates, optimizes and audits logistics decisions. Fortigo plugs into established supply-chain applications and provides rapid return on investment by optimizing and deploying closed-loop logistics processes, minimizing ship-to-order times and streamlining collaboration with logistics providers.

Fortigo
8310 N Capital of Texas Hwy
Austin, TX 78731
www.fortigo.com
info@fortigo.com

FORTIGO

Freightgate

Martin Hubert
President & CEO

Freightgate Vision:

For over 20 years Freightgate has been a leader in applications for Supply Chain Management. The majority of companies rank IT innovation as the competitive tool in today's information age. Freightgate is known as THE innovator in solutions that streamline the complexities of Global Rate Management, Routing and TMS. Our solutions are delivered over Cloud and Mobile networks. Learn how to reduce legacy IT costs by connecting to the Freightgate Logistics Information Fiber!

Freightgate SCM solutions can be integrated into most Enterprise Resource Planning (ERP) systems providing visibility and collaboration tools to proactively manage rates, routing, status, delivery and capacity to minimize disruptions.

Our generation of SCM solutions overcomes challenges with volatility and complex supply networks. Our solutions let you manage your entire network in real time. Quickly leverage critical information and analytics, to meet increased expectations to enable collaboration across stakeholders.

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Fax : +1 714-799-0011
sales@freightgate.com
www.freightgate.com

Logistics Cloud Innovation

Freightgate's Logistics Management (TMS) Platform, known as the Freightgate Universe, empowers professionals on all levels to collaborate with global vendors and logistics providers seamlessly on a single common transportation sourcing platform for informed decision-making across the entire global supply chain. It encompasses ISO9001:2015-certified end-to-end transportation management processes from procurement, rate management, optimization, execution and visibility, shipment track and trace, carbon-emission modeling, invoice audit & pay with enhanced carrier connectivity, KPIs and lane based analysis.

Freightgate's latest logistics cloud technology extends transportation management into the new mobile dimension, providing companies with in-depth 360 degree visibility of global supply chain processes and collaboration between manufacturers and its customers, suppliers, carriers and logistics providers.

The Freightgate Universe is comprised of adaptive easy-to-deploy applications to help companies leapfrog into the 21st century with minimal start-up cost. Easy integration with ERP, CRM, SCM environments and TMS transportation management systems.

Contract Rate Management & Sales Automation

Managing carrier tariffs, shipping rates, surcharges and discounts can be a tedious labor intensive task. By replacing countless pages of inconsistent and difficult to understand rates with an interactive, searchable internet native solution, you will gain a whole new level of productivity and win more business in the process. Freightgate supports advanced Rate Management Connectivity concepts for CargoSmart, FourSoft, SAP TM in addition to its open standards compliant webservices offerings. Imagine a world where you go from zero to quote in a few seconds.

Visibility & Collaboration

Freightgate's Visibility & Collaboration Platform ensures transparency and helps synchronize events along the supply chain with extra features to enhance collaboration. Sharpen your competitive edge by providing tracking information and event management along the entire supply chain. I-Trek! Mobile utilizes cloud-based connectivity to collaborate with customers and trading

FREIGHTGATE UNIVERSE

Experience the Power of NOW on the Logistics Information Fiber™

partners by sharing vital shipping information. I-Trek provides support tools to make real-time informed decisions that can have a major impact on bottom line performance.

Experts in API Orchestration

In a real time world where efficiency is king; instant response is what fuels supply chains of tomorrow. We have seen a substantial increase in inquiries regarding leveraging our rate engine via API access by various different sub-systems on the client side. By establishing strategic partnerships with our customers we give them a competitive advantage and an opportunity to access a broader range of resources and expertise. This fosters innovation to help generate new ideas, develop better products, and save costs.

Global Trade Compliance

The Freightgate Universe provides regulatory compliance solutions for importers, exporters, customs brokers, freight forwarders and ocean carriers with 10+2 security compliance and trade data reporting to the U.S. Customs and Border Protection (CBP). Along with functionality supporting U.S. Foreign Trade Regulations (FTR), Export Administration Regulations (EAR), Office of Foreign Assets Control (OFAC), and Homeland Security Denied Person Screening.

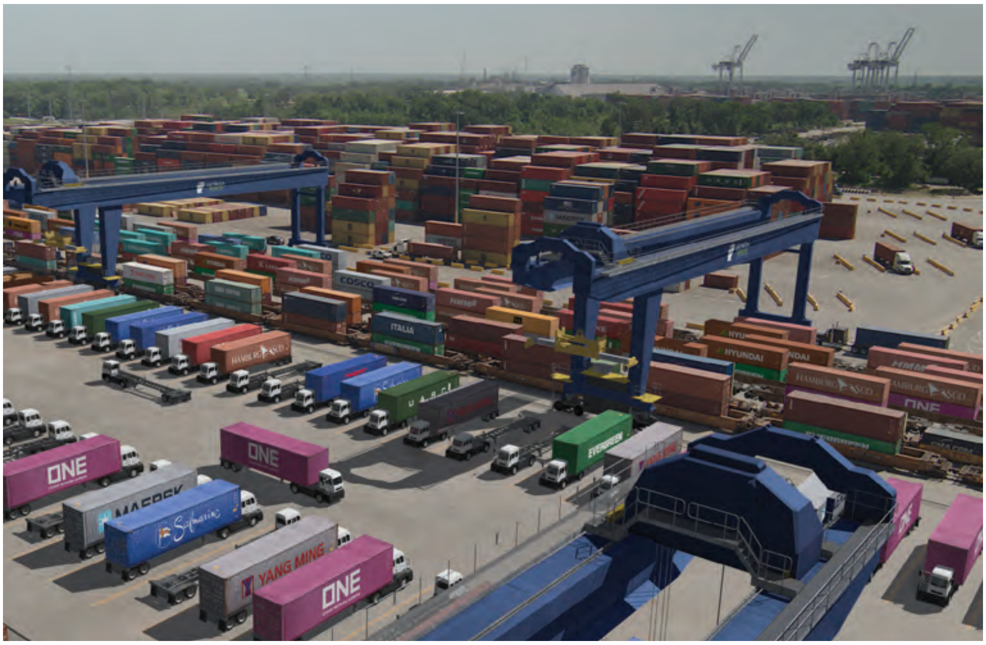
Start Today–Market Leaders rely on Freightgate's Logistics Cloud to accelerate their supply chain. Don't wait!

Freightgate®

Georgia Ports Authority

Griffith V. Lynch
Executive Director

OUR MISSION
The Georgia Ports Authority's mission is to empower entrepreneurs, strengthen industries, sustain communities and fortify families by relentlessly striving to accelerate global commerce.



GPA Making Major Rail Expansion

The Port of Savannah is the Southeast's busiest intermodal gateway. However, the Georgia Ports Authority is making a series of infrastructure improvements that set the stage to capture greater market share.

Key to expanding rail service is a project linking Garden City Terminal's two rail yards. The project, dubbed the Mason Mega Rail Terminal, will allow GPA to build additional 10,000-foot long unit trains on terminal without disrupting nearby traffic.

Set for completion in 2020, the first phase will come on line this year. The rail expansion will improve efficiency and double terminal rail lift capacity to 1 million containers per year. Unit train capacity on terminal will build density into the system, and enable rail providers CSX and Norfolk Southern to deliver faster, more frequent rail service to markets along the Mid-American Arc from Memphis to Chicago and the Ohio Valley.

Bolstering Intermodal Strengths

From ship to shore to on-terminal rail, the speed and efficiency of GPA's intermodal services are unmatched. With the addition of the Mason Mega Rail Terminal, service to Mid-American Arc cities becomes more competitive.

- GPA already features 27 trains per week to and from Mid-American Arc locations. Unit train capability will provide a new option, delivering reliable, consistent access to the Southeast and Midwest.
- Savannah currently offers the fastest westward transit times in the South Atlantic region, including overnight service to a five-state area – Alabama, Georgia, Florida, North Carolina and South Carolina.
- Port of Savannah customers moving containers by rail enjoy superior speed and reliability, with most cargo moving from vessel to rail within 24 hours.
- Savannah is just over 1,000 miles from Chicago by rail – comparable to other ports that are north of Savannah, but also farther east.
- Savannah rail providers Norfolk Southern and CSX Transportation provide double-stack container trains along the entire route between Savannah and the Midwest.
- Congestion-free movement from ship to rail cuts expenses and speeds delivery directly to the customer.
- As the first port of call on many Panama Canal shipping services, the Port of Savannah provides additional assurance of on-time cargo arrival.

Find this and MORE at gaports.com

GEORGIA PORTS

Chris Logan
Sr. Director, Trade Development, BCO Sales

Georgia Ports Authority
P.O. Box 2406
Savannah, GA 31402
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gaports.com

GlobalTranz

Renee Krug
CEO

Freight Driven by Technology

Solutions Offered:
- TMS for shippers, logistics service providers and carriers
- Managed Transportation
- Supply Chain Solutions
- LTL
- Truckload
- Partial Truckload
- Expedite
- Intermodal
- Air & Ocean
- Small Parcel
- Project Logistics

INBOUND LOGISTICS TOP 10 3PL PROVIDER 2018

SmartWay Transport Partner
Getting There With Cleaner Air

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1-866-275-1407
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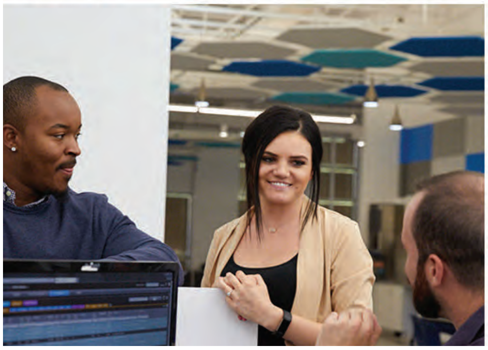
With additional offices in:
Chicago, IL
Niles, IL
Minneapolis, MN
Milwaukee, WI
Salt Lake City, UT
Charleston, WV
Prescott Valley, AZ
Monterrey, MX
Riverside, CA



GlobalTranz is a technology company providing award-winning cloud-based multi-modal Transportation Management System (TMS) products to shippers, logistics service providers and carriers. GlobalTranz is leading the logistics software and services market with innovative technology that optimizes the efficiency of freight movement and matches shipper demand and carrier capacity in real-time. Combined with our technology, GlobalTranz offers shippers a full-suite of logistics solutions to positively impact their bottom line.

Driven by our technology

Built to address real-world logistics challenges for shippers of all sizes, our TMS powers everything from fast rating, booking and freight management to real-time tracking, freight pay and audit, reporting and business intelligence. Load your own tariffs or use our rates and network of 34,000+ pre-qualified asset providers. Our GTZconnect™ TMS platform simplifies logistics management, drives automation and delivers end-to-end supply chain visibility.

Powered by our people

Operational efficiency is our prime objective. It doesn't matter if you're an enterprise or small-scale shipper, local or national, first-time customer or long-time client. GlobalTranz will help you find the best solutions for your logistics needs. We'll work as your partner to provide supply chain planning, day-to-day execution and strategic recommendations to reduce your freight costs, improve operational processes and give you a competitive advantage.

GLOBALTRANZ®
Freight driven by technology.

Hollingsworth

Mike McNamara
President

Mission Statement
Hollingsworth's mission is to provide the highest quality fulfillment, distribution and other third-party logistics services. The company's logistics services include assembly & sequencing, warehousing & packaging, program management, and reverse logistics. With all of these services, their mission is to ensure efficiency, accuracy and timeliness of order fulfillment for a wide variety of industries such as automotive, manufacturing, engineering and e-commerce.

The leadership at Hollingsworth is committed to sustainability in supply chain management, with processes designed to minimize our carbon footprint, reduce energy and fuel consumption, optimize their use of resources and more.

Hollingsworth
14225 West Warren Ave.
Dearborn, MI 48126-1456
313-768-1400

www.hollingsworthllc.com

Hollingsworth was initially founded nearly 100 years ago in Flint, Michigan, where they were one of the first expeditors of automotive parts in the world. Over the next few decades, they built a notable reputation for excellence in logistics services for the automotive industry and beyond. The current ownership acquired the company in 1987, and after two strategic mergers in 1993 and 2008, Hollingsworth has developed into the acclaimed provider of third-party logistics that it is today.

With national recognition for excellence, Hollingsworth is now a leading service provider of fulfillment & distribution, warehousing, reverse logistics, assembly & sequencing, packaging, and program management.

Utilizing cutting-edge systems such as their sophisticated SAP ERP technology, the company has a proven track record of efficiency and accuracy throughout the supply chain. From highly complex sequencing and assembly scenarios for automotive production, to optimized warehouse arrangements to accommodate millions of fasteners and parts for manufacturing, Hollingsworth's advanced systems and technology help to achieve maximum efficiency in their supply chain management.

In addition to excellence in supply chain management and 3PL services, Hollingsworth is committed to sustainability. They are actively developing their processes and implementing new technologies in order to reduce costs where possible, improve systems efficiency, and minimize consumption of fuel, energy and other resources. As an organization, Hollingsworth has applied key recycling initiatives that have resulted in hundreds of tons of recycled materials each year, earning the company recognition and awards for their efforts to conserve Earth's resources.

With locations strategically located throughout the U.S., Hollingsworth's distribution channels are able to meet short deadlines for shipping and order fulfillment. They can deliver most orders within three days to almost any destination in the contiguous United States. The company's headquarters are in Dearborn, Michigan.

Hollingsworth
Supply Chain Innovators

Holman

Brien Downie
Vice President

Extraordinary service for over a century

Our Core Purpose
Established in 1864, Holman exists to envision and bring into reality new concepts and ideas that help businesses operate more efficiently and cost effectively in order to improve the lives of people everywhere.

We strive every day to live by our Core Values:
- Focus on Operational Safety
- Help Each Other to Be Better
- Show Respect to All
- Serve Others
- Deliver an Extraordinary Service Experience

Inbound Logistics TOP 100 3PL PROVIDER 2016 2017 2018

Holman
22430 76th Ave. S.
Kent, WA 98032-9995
253-872-7140
Holmanusa.com

With headquarters in the Pacific Northwest and operations across the U.S., we provide public and contract warehousing, manufacturing logistics, plant support, transportation, shuttle, collaborative logistics and E commerce order-fulfillment services.

We are Experts in Partnering with Manufacturing Operations

We perform manufacturing logistics for both consumer package goods and durable goods clients, managing raw material inventories, material usage planning and delivery, quality control, lot control and facilities maintenance.

We Provide a Broad Array of Ground Transportation Services

Our transportation services vary from truckload and LTL deliveries to spotting and shuttle services. Holman regularly pools LTL deliveries across customers to realize transportation savings.

We Have Experience in Your Industry

We serve a wide variety of industries, including CPG, paper products, beverages, food packaging, pet foods, electronics, home appliances, heavy equipment and raw materials, among others.

We Create Lasting Relationships with Our Customers

As a privately-held company, we are not subject to shareholder requirements and quarter-by-quarter market results. This affords us the ability to both believe in and create lifetime relationships. We choose to invest in our people, in our processes and in our clients.

Your Search for the Perfect Partner is Over

The average length of our strategic customer relationships is over 34 years! We keep that business by providing extraordinary service. We know that your supply chain must add value to your product and to your customer's experience. If we do our job well, we'll help to ensure that your customers will build lifetime relationships with your business as well.

HOLMAN
Warehousing | Manufacturing Logistics | Transportation

Hoosier Energy

Harold Gutzwiller
Manager of Key Accounts and Economic Development

Mission Statement
To provide member distribution systems with assured, reliable and competitively priced energy and services in a safe and environmentally acceptable manner.

The Commitment Stands Tall sculpture, Hoosier Energy Headquarters, Bloomington, IN

Hoosier Energy is a non-profit generation and transmission cooperative (G&T) that provides wholesale power and services to 18 member distribution cooperatives.

Collectively, member cooperatives operate and maintain more than 36,000 miles of distribution lines and provide electric service to nearly 300,000 consumers or about 650,000 people in 59 counties in southern Indiana and southeastern Illinois.

Hoosier Energy's "all-of-the-above" power supply includes 2,000 megawatts of generation that includes coal, natural gas, renewable energy and power purchase contracts. Taken together, these resources provide the best balance of affordability, reliability and sustainability to meet member needs.

The G&T's interconnected transmission network includes nearly 1,700 miles of high-voltage power lines, 25 transmission stations and about 300 delivery points.

In addition, Hoosier Energy provides training, key accounts, marketing, communications and technical services to its member cooperatives. Hoosier Energy and its members are cooperative businesses that provide reliable, affordable electric power and carry on a long-standing commitment to improve the quality of life in our communities.

Our Commitment to Economic Development

Through Hoosier Energy's 2018 efforts, an estimated 2,500 new jobs and $730M in capital investment was created in member territories. Because of this dedication and contribution to our counties' economic growth, the Hoosier Energy Economic Development program continues to be one of the Midwest's leading economic development organizations.

The Indiana and Illinois economic development program at Hoosier Energy provides comprehensive economic development services throughout our service territory. Some of these services include:

- Shovel-ready site listings
- Electric usage cost estimates
- Searchable business maps
- Searchable sites and buildings maps
- Personalized assistance.

Our Commitment to Quality, Reliability

To help ensure a consistently reliable power supply, Hoosier Energy's power delivery system is connected to the regional power grid and interconnected with other utilities. As well, the power supply cooperative is a founding member of the Indianapolis-based Midcontinent Independent System Operator (MISO), which manages power flow, transmission reliability and power marketing throughout a 15-state region and parts of Canada.

The power supply cooperative has been recognized nationally for its environmental stewardship and education programs, including an education center, free electronic lending library for educators, and community watershed conservation efforts.

Each of the power supply cooperative's members elects a representative to the Hoosier Energy Board of Directors, which develops policies and reviews the co-op's operations. The chief executive officer and his staff carry out day-to-day management of the organization, directing a work force of more than 440 employees.

HOOSIER ENERGY
A Touchstone Energy® Cooperative

Hoosier Energy
P.O. Box 908
Bloomington, IN 47402
Direct: 812-876-0294
Hoosiersites.com

Hub Group

David P. Yeager
Chairman & CEO

Don Maltby
President & COO

Hub Group is a leading supply chain management company that provides innovative, value-added multi-modal logistics solutions by offering reliability, visibility and value to our customers. A multi-billion dollar, publicly traded company, Hub Group leverages 47 years of experience to develop and deliver strategic supply chain solutions that allow us to best service each customer. Combined, our multi-modal solutions deliver a managed end-to-end strategy enhanced by leading technology and award-winning customer support.

Intermodal

Our flexible intermodal fleet combines 38,000 of our own 53-foot containers with access to 95,000 rail-owned containers to deliver effective solutions across North America. Supported by 2,500 drivers and strong carrier relationships, your shipments will benefit from top quality execution from door to door.

Brokerage

Harness our buying power with more than 20,000 carriers throughout North America to craft truly tailored truckload and less-than-truckload solutions. A unique mix of national and regional providers will deliver customized services that include committed capacity, project management, transactional capacity and expedite, each scalable to your specific need and supported by specialized equipment capabilities.

Dedicated

Our dedicated solution is built on years of award-winning expertise with customers across every vertical, with 3,000+ drivers and 5,500+ trailers operating coast to coast. Our solutions are focused on safety and efficiency, crafted to enhance service while reducing costs in key locations across your supply chain.

Logistics

Hub Group's Logistics services bring years of award-winning transportation solutions to generate efficiency and value throughout your supply chain. Our custom solutions utilize a multi-modal approach backed by integrated technology and modeling to continually strive for meaningful savings. With Account Management resources and continuous improvement initiatives coupled with comprehensive business intelligence, your business will benefit from streamlined management and optimum visibility.

Consolidation and Warehousing

New to the Hub Group family, CaseStack provides retail freight consolidation programs and warehousing services optimized by proprietary technology. With critical mass at strategic cross-dock locations, your business will benefit from increased performance and reduced costs, while meeting the industry's top retailers' rigorous service standards.

Forbes | 2018 AMERICA'S BEST MID-SIZE EMPLOYERS POWERED BY STATISTA

INBOUND LOGISTICS TOP 10 3PL PROVIDER 2018

2018 SmartWay Excellence Awardee

Hub Group

Hub Group
2000 Clearwater Drive
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800-377-5833
info@hubgroup.com
www.hubgroup.com

iGPS

Jeffrey Liebesman
Chief Executive Officer

iGPS is dedicated to being the industry leader of innovative, world-class supply chain solutions leveraging sustainable, intelligent shipping platforms while achieving unmatched value for our customers, investors, and employees.

We Value P.R.I.D.E.

Passion: We value intense pursuit of our company's mission.
Respect: We value our people, customers, partners, diversity and the environment.
Innovation: We value creativity and continuous improvement.
Dedication to Excellence: We value acting as one team to deliver quality and value in all we do.
Ethics and Integrity: We value honesty, transparency and ethical behavior.

iGPS
LIGHTER, STRONGER, SAFER, GREENER

iGPS
225 E. Robinson Street
Suite 200
Orlando, FL 32801
1-800-884-0225
info@igps.net
www.igps.net

iGPS: Leading the Market Through Sustainable Supply Chain Solutions

iGPS, which has been providing innovative, world-class supply chain solutions to markets throughout the U.S., has created a sustainable shipping platform that is disrupting the dynamics of the industry.

iGPS's recent growth in new business recognizes the shift from traditional pallets to the more protective and sustainable platform provided through iGPS. The key is the company's plastic pallet pooling system, which provides lighter, safer, stronger recyclable and more environmentally friendly pallets than wooden counterparts. Because iGPS' pallets always are of consistent size specification, have no protruding nails, eliminate splinters, have a crucifix bottom deck, engineered corners and cannot absorb bacteria, they have structural reliability and cleanliness, no contamination, greater stability and less interruption of the automated manufacturing or shipping processes. In fact, this system creates a complete "flow-through efficiency", which is novel to the iGPS pallet.

Just as important, that process simplification also reduces product damage. By eliminating the shards, splinters, cracks, nails and surface contamination of standard pallets, the iGPS platform removes the primary elements that, otherwise, contribute to product damage – as well as hygiene concerns. Yet, the advantages go even

further. This sturdier and greener iGPS platform also introduces three critical elements into the supply chain: 1) Sustainability; 2) Cost Savings; and 3) Efficiency.

Improved Sustainability: A comprehensive independent life-cycle analysis examined the cradle-to-grave impact of all three types of pallets, finding that the iGPS platform had dramatically less impact on all measured dimensions. Since they are 27 pounds lighter than typical wood pallets, requiring far less transport fuel, the iGPS platforms actually reduce pollution and greenhouse gas emissions. Also, the new iGPS Generation 3 (Next Gen) pallets are 100% recyclable.

Proven Cost Savings: An independent study also found that when supply chains in produce, dairy and protein switch to the iGPS platform, those companies have enjoyed meaningful savings per pallet load. The results were unambiguous, accruing across all stages of the supply chain, with benefits for both manufacturers/growers, shippers and retailers.

Greater Efficiency: All iGPS pallets are constructed of sturdy, lightweight (48.5 lbs.) plastic, in true 48" x 40" size. Always exceeding or meeting ISO and GMA standards, the iGPS platform is the only pallet to receive NSF's Food Equipment Certification – of critical importance in today's high tech ASRS, AGV, robotic and food safety sensitive environment. IGPS pallets are always in excellent, uniform condition, creating greater efficiency through simplicity and consistency in the supply chain.

It's no wonder that iGPS has seen a significant increase in customers and expanded use among existing clients within just the past year. This has included new agreements with Ainsworth Pet Nutrition, Niagara Bottling, Nestle Waters and Gerawan Farms among others.

Intelligent Audit

Hannah Testani
Chief Operating Officer

Mission Statement
Intelligent Audit aspires to help shippers reduce spend and ship smarter by leveraging the industry's leading audit and business intelligence platform.

The Missing Link in Your Supply Chain.

Intelligent Audit is the technology leader in freight audit and transportation spend management. IA helps some of the largest and most complex global shippers analyze, benchmark, optimize, and gain critical insights into their global transportation network. With best-in-class audit and reporting technology, clients are able to leverage their data to reduce costs, enhance real-time visibility, and improve end-customer experience.

Our cloud-based solution addresses logistics pain points using data-driven analytics and reporting to examine all transportation activities, identify trends, and uncover areas for improvement and optimization. We serve customers of all shapes and sizes—from Fortune 10 to small- and mid-sized businesses—and are a single-vendor solution supporting audit and payment across all transportation modes globally.

With more than 2,500 clients representing over $9 billion in annual transportation spend, Intelligent Audit prides itself on providing customers with the tools and insights to help them ship smarter.

Our Solution Includes:

1. Freight Audit and Recovery
Fully-automated audit across all modes and regions with the most robust audit engine in the marketplace.

2. Business Intelligence & Analytics
Achieve real-time visibility to all global transportation activity in IA's proprietary cloud-based reporting portal. Leverage normalized data to track performance, identify inefficiencies, and prescribe solutions.

3. Spend Optimization
Determine optimal carrier/service mix. Utilize 'big data' to benchmark against like-shippers. Develop roadmap for network optimization strategies, such as zone skipping or footprint redistribution.

4. Financial Reporting
Manage complex GL coding and cost allocation by geography, business unit—even SKU. Provide detailed accruals to track all unbilled carrier activity. Model landed costs and compare to forecasts.

5. Freight Payment with Triumph
Streamline carrier payment processes with the security and backing of Triumph Bank, a Nasdaq-listed financial institution and leader in carrier payment technology and supply chain financing.

6. Proactive Advisory Support
Dedicated strategic account advisors proactively analyze your data, identify issues, uncover opportunities, and act as an extension of your team.

INTELLIGENT AUDIT

IA Headquarters
365 West Passaic Street
Fourth Floor
Rochelle Park, NJ 07662

Phone: 201-880-1110
Fax: 201-809-2616

Kenco

Denis Reilly
President & CEO

"What I like about Kenco is that you are big enough to handle our business and everything we throw at you, but you are small enough that we are important to you."
– Customer Testimonial

Kenco is the largest woman-owned third-party logistics company in the United States. We provide integrated logistics solutions that include distribution and fulfillment, comprehensive transportation management, material handling services, real estate management, and information technology–all engineered for Operational Excellence.

Privately-held and financially strong, we take our corporate responsibility seriously by engaging in ethical, honest, and sustainable business practices. Our agility, customer dedication, and common sense solutions drive uncommon value.

We engineer creative solutions that provide tangible value with the highest level of quality, service, and continuous improvement in the following areas:

Distribution and Fulfillment

Kenco operates over 28 million square feet of warehouse space across North America. We perform services that go far beyond the receiving and storage of freight. Some of these value-added services include: network optimization, sequencing, raw materials management, product testing, vendor-managed inventory, and regulated pharmaceutical destruction. Kenco's technology solutions bring agility and flexibility to our customers. We offer the combination of several powerful tools to help you manage your information, workforce, inventory, space, and time.

Transportation Management

Companies rely on Kenco for innovative solutions to lower transportation costs, improve customer service, and reduce order cycle times. Our experts focus on your transportation needs so you can focus on your company's core competency. Kenco offers full-service transportation solutions, which include dedicated fleet management, freight management, transportation brokerage, over the road transportation, and transportation management systems.

Material Handling Solutions

Kenco has been providing material handling equipment (MHE) and maintenance services for over 50 years. In addition to regional forklift dealerships, Kenco has the ability to provide on-site technicians that perform preventative maintenance and repairs. This service can substantially reduce equipment downtime and maintenance costs. We also offer a fleet strategy service that tracks and reports MHE data to allow management to make more informed equipment decisions.

Real Estate Management

JDK Real Estate is known for optimum site selection and rate negotiation power. We leverage our partnerships with internationally known real estate firms to provide a "one-stop shop" capable of managing the real estate process from beginning to end. We can locate an existing site or build-to-suit, and customize, equip, and manage the facility.

Through our Women's Business Enterprise National Council (WBENC) certification, Kenco fulfills a unique market niche by offering high-quality and comprehensive services on a large scale while allowing customers to meet supplier diversity goals.

Certified WBENC Women's Business Enterprise

Inbound Logistics TOP 10 3PL PROVIDER 2018

An Inbound Logistics GREEN SUPPLY CHAIN PARTNER 2018

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Blog

KENCO Logistics

Kuebix

Dan Clark
Founder and President

Kuebix Mission
Kuebix was founded in 2008 with the mission of leveraging the latest cloud technology to build a transportation management system (TMS) with Freight Intelligence that enables companies to capitalize on supply chain opportunities through visibility, control and the use of predictive analytics. That vision was realized when the Kuebix team of freight and technology experts launched Kuebix TMS, a next generation SaaS TMS that is changing how businesses of all sizes purchase freight.

Products/Services
- Kuebix TMS (Shipper, Business Pro, Enterprise)
- Premier Applications
- Integrations
- Managed Services

Thinking of Implementing a TMS? Download our "TMS Buyer's Kit" for resources to help you find the right TMS for your needs.

Kuebix
5 Mill & Main Place
Maynard, MA 01754
978-298-2100
www.kuebix.com

Whether you're looking to lower freight spend, battle the capacity crunch and driver shortage, meet rising customer expectations, manage a growing logistics operation, or discover new efficiencies in a sophisticated supply chain, Kuebix shifts the balance of power back to you, the shipper.

It all starts with Kuebix's transportation management system, the industry's fastest growing TMS with access to a global community where shippers and carriers collaborate to drive better levels of service and accountability. Instantly rate, book and track orders using Kuebix's cloud-based, multi-tenant TMS. From order creation to final mile, customers gain sorely needed visibility and can apply predictive analytics to their operations to make better strategic decisions.

Kuebix TMS is a single code base that scales from meeting the needs of small businesses to enterprise organizations with more complex and elaborate supply chains. The TMS can be implemented quickly with the base TMS, then Premier Applications and Integrations can be seamlessly added in a modular fashion. Kuebix also offers unique Managed Service Programs to businesses looking to partially or fully outsource transportation management.

Kuebix TMS was designed by a team of freight industry experts who have helped build and optimize corporate shipping operations for renowned enterprises. Dan Clark, Founder and President of Kuebix, is a transportation industry veteran. He possesses extensive operations and sales experience gained from years of working with leading freight carriers. He has also consulted with multibillion-dollar corporations with vast supply chains and is known as an industry visionary who has found a way to embed his strategy for supply efficiency into an intuitive, powerful software platform.

At Kuebix's core is Freight Intelligence™; actionable analytics that enable logistics professionals to spend their time planning ways to increase the efficiency of their supply chain rather than fighting fires. Many of Kuebix TMS customers have reduced their annual freight spend by as much as 20%, and have implemented programs that can turn their freight operations into a profit center.

With the data-fueled management capabilities of Kuebix TMS, logistics managers can help position the logistics department as a strategic asset as businesses seek to continually evolve and optimize their core operations.

KUEBIX®
Freight Intelligence™

Landstar System, Inc.

Jim Gattoni
President & CEO

THE LANDSTAR ADVANTAGE

A recognized industry leader, Landstar provides safe, secure, reliable transportation services delivered by our unique network of independent agents and capacity providers. Landstar customers enjoy personalized service at the local level with the global reach and resources of a multi-billion dollar company.

Safe, Reliable Capacity at a Cost-effective Price

- One of the industry's largest van and platform selections with over 59,000 truck capacity providers under contract
- Expedited cargo vans, straight trucks and tractor-trailers
- 15,000 pieces of trailing equipment
- Access to 1,400 stepdecks, 1,300 flatbed trailers
- Drop and hook services
- Specialty trailers ranging from beam, blade and Schnabels to double drop, stretch and multi-axles

Global Air & Ocean Freight Forwarding Services

- Import/Export, at major ports
- Air express, air cargo and air charter
- Licensed NVOCC
- Full & less-than-container loads, plus over-dimensional breakbulk

Rail Intermodal

- Boxcar, bulk, flatcar and tank capacity
- Contracts with major rail and stack train operators
- Service into Canada and Mexico

Landstar System, Inc.
13410 Sutton Park Dr. South
Jacksonville, FL 32224
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Solutions@landstar.com
www.landstar.com

LEGACY Supply Chain Services

Mike Glodziak
President & CEO

Commitment to Customers:
LEGACY is a third party logistics partner who builds client-centric solutions that add business value, improve cost-to-serve, and enable profitable business growth across B2B & B2C sales channels.

Commitment to People:
Our customers' dynamic supply chains are operated by dynamic LEGACY Leaders. We put people first, providing real career opportunities enhanced by dedicated programs to develop the next wave of supply chain Leaders.

LEGACY Supply Chain Services
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www.LEGACYscs.com

For nearly 40 years, LEGACY Supply Chain Services has been a value-added provider of warehousing, distribution & transportation solutions for dynamic supply chains in the US & Canada. Our high-touch customer service and operational expertise deliver results for clients in many industries including retail, consumer goods, industrial manufacturing, technology, aftermarket automotive, and food & beverage.

Solving Today's Logistics Challenges…

Supply chain has become a primary enabler of profitable business growth—directly responsible for boosting sales, enhancing customer satisfaction, and strengthening brand loyalty. Companies are faced with complex and evolving supply chain challenges: How do I reduce my cost-to-serve diverse customer markets? How do I overcome supply chain labor challenges? How do I ramp speed-to-market? How do I optimize inventory to serve multiple sales channels?

…with Omni-Channel Expertise

Today's consumer-driven supply chain requires sound strategy & ability to execute across all sales channels:

Direct to Consumer & eComm | Direct to Store | DC to DC | Big Box Retail | Wholesaler & Distributor

HOW We Do It: We are supply chain operational experts—with deep and diverse experience customizing solutions for Fortune 500 and mid-size clients across many industries.

Solutions for Dynamic Supply Chains

LEGACY's know-how in dynamic supply chain environments increases speed to market, reduces costs, and increases service levels for our clients:

- **Value-Added Warehousing & Distribution:** contract warehousing & distribution, omni-channel distribution—driving cost-to-serve and other critical KPIs in dynamic b2b & b2c supply chain environments
- **eCommerce Fulfillment:** ecommerce order fulfillment & drop shipping solutions in dedicated and shared warehouse environments, technology integration to enable online supply chain
- **International Transportation & Customs:** import & export freight forwarding, NVOCC ocean freight, air cargo, foreign-to-foreign, US Customs brokerage & foreign border crossing services
- **North American Transportation:** intermodal, over-the-road and last mile solutions for today's capacity-constrained transportation market
- **Dedicated Fleet Solutions:** remove network variability—operations, admin, safety & compliance management, asset & non-asset models
- **And Everything to Add Value in Between:** supply chain design, transportation analysis & planning, customized supply chain technology

Learn how LEGACY can add value in your dynamic supply chain—visit LEGACYscs.com

LEGACY
SUPPLY CHAIN SERVICES

Lynden

Jim Jansen
Chairman

At Lynden, our job is to deliver innovative transportation solutions to our customers.

Lynden began with a clear mission: put the customer first, deliver quality, and be the best at what you do. Today, Lynden's service area has grown to include Alaska, Washington, Western Canada, and Hawaii, with additional service extending throughout the United States and internationally, via land, sea and air. Our mission remains the same. Complex transportation problems can be solved in the hands of the right people, with the right tools and the right experience.

Lynden
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Over land, on the water, in the air – or in any combination – Lynden has been helping customers solve transportation problems for over a century. Operating in such challenging areas as Alaska, Western Canada, the South Pacific and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries including oil and gas, mining, construction, retail, seafood and manufacturing.

Lynden is a family of transportation companies with the combined capabilities of truckload and less-than-truckload transportation, scheduled and charter barges, intermodal bulk chemical hauls, scheduled and chartered air freighters, domestic and international forwarding and customs services, sanitary bulk commodities hauling, and multi-modal logistics.

The Lynden family of companies delivers a completely integrated freight transportation package. Our people have the knowledge to quickly respond and solve your multi-modal transportation problems. From origin to destination, over any terrain, managing freight movement, as well as the flow of information, Lynden provides innovative solutions to meet your unique needs, keeping you in control while providing you with services no other company can match.

Lynden was founded on principles of integrity and quality. Its environmental commitment is based on a common-sense desire to be efficient and to do things right. Its culture of innovation and efficiency is completely in harmony with its commitment to protect the environment. Lynden's people, equipment, processes and technology are focused on the efficient use of resources and sustainable operations.

Proudly serving Alaska for more than 60 years.

LYNDEN

Mallory Alexander International Logistics

W. Neely Mallory III
President

Mallory Alexander International Logistics is a leading third-party logistics (3PL & 4PL) provider. We support manufacturers, retailers and other suppliers in the storage and shipment of their valuable cargo, and we do it with confidence—on time, with care, everywhere. We recognize the invaluable role our customers play in the international economy and in lives around the world.

We navigate the complex logistics landscape and build safeguards into our processes, ensuring accuracy and providing our customers peace of mind. We create reliable yet nimble systems to meet our customers' dynamic needs, at every touch point, every time.

Your biggest challenges are met with creativity and supported by our offices around the world and warehouses at strategic U.S. locations. As a financially secure company, Mallory Alexander has the stability and commitment to develop long-term relationships in global commerce.

Rely on Mallory Alexander for superior supply chain performance around the world.

Experience

Mallory Alexander works to establish partnerships with our customers to develop customized business solutions that fit their particular needs, while ensuring that their corporate goals are met. Combining best in class operating procedures and systems with a comprehensive network of agents and service providers allows customers to maximize the value of their supply chain spend.

At Mallory Alexander, we align our objectives with our customers' objectives. As a solution provider first, we are not bound to a limited group of suppliers or services officers. Offering value added services such as customs brokerage, white glove delivery, fulfillment and repackaging services, along with a select team of dedicated employees, clearly distinguishes us from other third party logistics providers.

Expertise

For more than 93 years, Mallory Alexander has been providing our expertise to a broad range of diverse logistics problems. Originally founded in Memphis to warehouse and ship cotton, we now lend our expertise to a range of customers in many industries. Mallory Alexander services include:

- Public and Contract Warehousing Facilities
- Freight Forwarding and Brokerage
- International and Domestic Air
- Domestic Transportation
- NVOCC
- Customs Brokerage
- Supply Chain Consulting
- Managed Logistics
- Cargo Security
- IT Solutions

Excellence

Our commitment to your success requires nothing short of excellence. Mallory Alexander is fully licensed, ISO9001:2015 and C-TPAT certified. We participate in government agencies and third party training and seminars to ensure the highest degree of compliance with the US government regulations. We are a winner of the President's E-Award for Exporting Excellence and the President's E Star Award for the promotion of U.S. Exports.

Mallory Alexander offers a proud tradition of innovative logistics solutions, tailored quality services, and leading edge technologies delivered every day by the best professionals in the business. We recognize that people are our greatest asset and our success is based on the integrity of people who have a passion and commitment to serve their customers.

Mallory Alexander is right-sized with the expertise and flexibility that our customers demand. We are proud to call Memphis, TN home for our company headquarters and the foundation for all our global offices.

MALLORY ALEXANDER
INTERNATIONAL LOGISTICS
confidence delivered
on time. with care. everywhere.

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Maryland Port Administration

James J. White
Executive Director

Mission Statement:
The Maryland Port Administration (MPA) oversees and manages the six public marine terminals of the Port of Baltimore. It is tasked to stimulate the flow of waterborne commerce through the State of Maryland in a manner that provides economic benefit to Maryland citizens. The MPA directly markets, promotes, and facilitates trade through the Port of Baltimore while supporting both public and private Port facilities. The Port of Baltimore annually generates about 13,600 direct jobs, and nearly 130,000 jobs in Maryland are linked to the POB.

Maryland Port Administration
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More than 300 years removed from its beginning as a colonial hub for the tobacco trade, then as a budding shipbuilding mecca famous for its "Baltimore Clipper," today the Port of Baltimore is widely celebrated for its specialization in moving a 20th century conveyance – the automobile. Among the most diversified cargo gateways in the United States, it is a leading port of departure and arrival for automobiles and roll on/roll off (ro/ro) cargo, while also laying claim as one of the top destinations for imported forest products, paper, gypsum, sugar, and iron ore.

Centrally located on the Atlantic Coast, the Port of Baltimore, which is managed by the Maryland Port Administration (MPA), is the farthest inland port in the United States with a 50-foot deep channel. Baltimore now has a 50-foot deep container berth that is ready to welcome the world's largest ships today.

It is also the closest Atlantic port to major Midwestern population and manufacturing centers and a day's reach from one-third of all U.S. households. Steel manufacturers in Pittsburgh, furniture makers in North Carolina, and consumers in Boston are all served in less than 24 hours from the port.

In terms of transportation, the Port of Baltimore is located adjacent to the East Coast's primary north-south corridor, I-95, proximate to east-west running I-70, and is served by both CSX and Norfolk Southern railroads.

One of the unique aspects of the port's trade is the diversity of cargo moving through its facilities. With a balanced portfolio of automobiles, forest and paper products, ro/ro, and container shipments, the port hosts a variety of global shippers and is less vulnerable to precipitous drops in niche trades.

The MPA operates six public terminals:

- **Dundalk Marine Terminal (570 acres):** Containers, breakbulk, wood pulp, ro/ro, autos, project cargo, farm and construction equipment.
- **Fairfield Automobile Terminals (104 acres):** Automobiles.
- **The Intermodal Container Transfer Facility (84 acres):** International and domestic containers.
- **North Locust Point Marine Terminal (90 acres):** Wood pulp, lumber, latex, steel, paper, and containers.
- **Seagirt Marine Terminal (284 acres):** Containers.
- **South Locust Point Marine Terminal (79 acres):** Forest products.

Matson

Matt Cox
Chairman and CEO

Mission Statement
To move freight better than anyone.

A leader in Pacific shipping, Matson's ocean transportation service is recognized for its industry leading on-time arrival performance and award-winning customer service. Its diversified fleet features containerships, combination container and roll-on / roll-off vessels and specially designed container barges. Matson's ships and assets are U.S.-built, -owned and -operated, which provides significant advantages in the integrated trade lanes of the company's operations.

Serving Hawaii continuously since 1882, Matson is uniquely experienced in carrying the wide range of commodities needed to support remote economies.

Providing a vital, reliable lifeline to the economies of Hawaii, Alaska, Guam, Micronesia and select South Pacific islands, Matson is a key supply chain partner allowing customers to rely on the company's dependable vessel schedules to continually replenish inventories.

Matson's China-Long Beach Express has a strong reputation in the Transpacific trade for reliable, expedited service from Xiamen, Ningbo and Shanghai to Long Beach, consistently delivering the best transit times and offering next day cargo availability on the West Coast.

Matson's Pacific services are further enhanced by the transportation and distribution network of the company's subsidiary, Matson Logistics. A leading provider of freight transportation, warehousing, and supply chain services to the North America market, Matson Logistics helps companies source, store, and deliver their products faster, more reliably and cost efficiently. Its services and technology are customized to drive efficiencies in—and costs out—of supply chain networks for retailers, manufacturers, and distributors.

Matson Logistics' sourcing, transportation, and distribution solutions include:

- Long haul and regional highway FTL and LTL service
- Domestic and international intermodal rail service with all Class I providers
- Specialized hauling, flatbed, and project logistics
- Contract and public warehousing at key East and West Coast ports including transload, cross-dock, and product preparation and handling down to the sub-SKU level
- Freight forwarding in Alaska; cross-border service to Canada and Mexico
- Value-added retail packaging services, light assembly, and product customization
- E-commerce fulfillment and DtC programs
- Asia-origin consolidation, PO management, customs brokerage, and NVOCC services for FCL and LCL shipments
- Online, on-demand portal to book, track, and manage your shipments—from source to store

Matson is firmly committed to operational excellence and providing its customers with the highest level of service across all modes of transportation.

Learn more at matson.com.

Matson

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www.matson.com

MD Logistics

Mark Sell
President and Co-Founder

Our Mission:
At MD Logistics, our mission is to support our team of leaders, dedicated to each other and our customers, in order to remain fast and flexible while providing custom supply chain solutions in a high quality environment, on time, every time.

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Reno Office:
12125 Moya Blvd
Reno, NV 89506

MD Logistics is a third party logistics company specializing in customized supply chain solutions. Our vertical markets include Life Sciences and Pharmaceuticals, Retail and Consumer Goods, as well as Transportation Services. In addition to cold chain and foreign trade zone warehousing, our services range from packaging, fulfillment and distribution to global freight forwarding and freight management.

Located in Plainfield, Indiana, and Reno, Nevada, our combined facilities include state of the art Pharmaceutical and Retail distribution space.

Life Sciences and Pharmaceuticals

MD Logistics designs customized supply-chain solutions for global distribution of trade, sample and clinical specialty products. Our facilities are fully licensed and accredited, maintaining cGMP and VAWD standards, enabling us to provide compliant cold chain storage for finished and WIP products. We deliver these standards through the utilization of Red Prairie WMS and strategically located state of the art facilities. We offer full integration with our customers' ERP software and support electronic data interchange for order management and reporting. Most critical to operational success, our dedicated and experienced pharmaceutical team stands behind our services to ensure the utmost product quality and maximum customer satisfaction.

Retail & Omni-Channel Logistics

MD Logistics client shared facilities manage high-volume, high-value, market-driven, retail-sensitive products for industries that expect maximum performance and flexible infrastructure. We handle B2B and e-commerce distribution, supporting the top 100 retailers in the country. Our tier one WMS fully integrates with our customers' ERP software and supports electronic data interchange for order management and reporting. By combining a wide array of custom solutions, the MDL team manages your supply chain from start to finish.

Transportation Services

Beyond traditional warehousing and distribution services, MD Logistics offers freight management, global freight forwarding and brokerage services. Our Indianapolis and Reno facilities are both located near International airports and within a day's drive of over 80% of the US population. We are strategically positioned to offer customers a range of all-inclusive transportation services and optimize their transportation budgets.

MGN Logistics

Matthew Telesca
President & CEO

Mission statement:
To provide the industry's most innovative Transportation Management Software through technology and dedication, thereby helping businesses efficiently manage their supply chain.

MGN Logistics is a leading provider of IT solutions for the freight management and transportation industry. Their Transportation Management Software or TMS platform has been the backbone of some of the country's largest 3PLs for many years. Now, this innovative technology is being made available to individual companies to assist in improving operational efficiencies.

MGN's cloud-based TMS supports all modes of transportation including Truckload, LTL, Ocean, Air, Rail, Intermodal and Parcel, providing customers with a powerful, yet easy-to-use, single platform for their entire supply chain. An early pioneer of web-based transportation management solutions, MGN's innovative and proprietary TMS was designed by transportation professionals with real-world experience.

Whether you are looking for a simple rate comparison or a complex, fully managed supply chain solution, MGN Logistics' state-of-the-art, NextGen platform has what you need. Their cloud-based TMS offers seamless integration into existing Enterprise Resource Planning (ERP) and Warehouse Management Systems (WMS) or can be implemented as a stand-alone solution. Services include mode and carrier selection, rate optimization, automated tracking and tracing, including GPS, freight bill auditing and payment, along with business intelligence, blockchain, artificial intelligence and sophisticated analytical tools.

MGN provides the highest level of consulting intelligence coupled with technology to implement best practices, compliance, and auditing to maximize all available opportunities for improvement. Some of the benefits MGN Logistics' customers experience from our solution include:

- Immediate cost reduction from carrier and mode optimization
- Full transparency into all shipment invoices
- Real-time visibility into any shipment metric
- Vendor shipment execution and compliance reporting
- Artificial Intelligence for optimization
- Blockchain enhanced data security
- Access to live market data

Are you tired of hearing about other companies' supply chain successes? Then join the growing number of businesses that are now taking control of their transportation spends. MGN Logistics has been recognized by *Inc. magazine*, five years in a row as one of the country's fastest growing private companies. Find out why some of the best industry professionals in the business have turned to MGN Logistics for their TMS solution.

MGN Logistics
Contact information:
George Williams
Vice-President of
Business Development
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www.mgnlogistics.com

MHI

The Industry That Makes Supply Chains Work

George W. Prest
CEO

MHI is an international trade association that has represented the industry since 1945. MHI members include material handling, logistics, and supply chain equipment and systems manufacturers, integrators, consultants, publishers, and third-party logistics providers. Much of the work of the industry is done within its product- and solution-specific groups. The association also sponsors trade events, such as ProMat and MODEX, to showcase the products and services of its member companies and to educate industry professionals on the productivity solutions provided through material handling and logistics.

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mhi.org

Blog

ProMat 2019

ProMat is where you'll find the wow you need to transform your supply chain into a competitive advantage. At ProMat 2019, you'll find 900+ exhibits and 100+ education sessions tailored to help you discover equipment and system solutions for your material handling and supply chain needs. With keynotes, networking, education, and product booths, ProMat is where manufacturing and supply chain innovation comes to life – in person and in action. Experience 1,000 providers as they demonstrate the latest equipment and systems that will deliver the WOW to help you:

- Improve visibility & accelerate time to market
- Reduce operating costs & increase efficiency
- Streamline & automate your operations
- Connect with solution providers & key thought leaders
- Discover the latest technologies & innovations
- Learn the latest trends in over 100 educational sessions

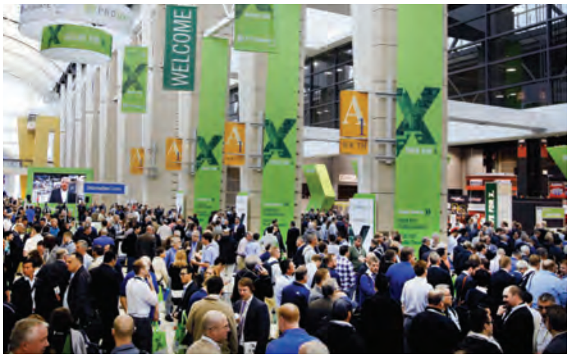
On April 8-11, manufacturing and supply chain professionals will have an unrivaled face-to-face opportunity to network, learn, share, and get a sneak preview of where our industry is headed.

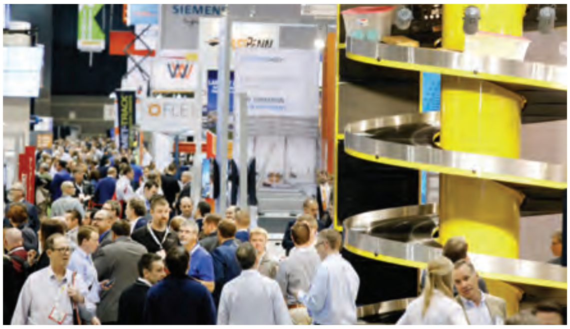
IN-PERSON EXPERIENCES. OUTSTANDING RESULTS.

There's no substitute for meeting face-to-face and watching equipment and technology operate in real time. ProMat 2019 gives you the chance to do both. When you're here, you can connect with industry peers and 1,000 solution providers to find what you need to move your business forward.

SET YOURSELF UP FOR FUTURE SUCCESS.

The future of the manufacturing and supply chain industry starts at ProMat. It's where the brightest minds in the industry gather to network, learn, and share. Get a sneak preview of where the industry is going and find the people, solutions, and





resources you need to compete in an increasingly challenging marketplace.

EXPLORE GLOBAL OPPORTUNITIES.

ProMat is an international event with manufacturing and supply chain professionals attending from over 140 countries. To accommodate our international visitors, we offer special interpreting services, meeting rooms, and matchmaking tools to help you take full advantage of a global economy.

So whatever solutions you need to move your business forward, you'll find them all at ProMat 2019. Register today at promatshow.com and join us at McCormick Place in Chicago.

PROMAT 2019
McCormick Place | Chicago
April 8-11, 2019
promatshow.com
powered by MHI

MHI
THE INDUSTRY THAT MAKES SUPPLY CHAINS WORK®

Mid America Logistics

Mark Kummer
President

Everything We Do Is By Design

Mid America Logistics is a full-service logistics company driving the best people and best technology with a dedicated passion for service. We have a massive network of high-performance partners and our own in-house written software, making us the easiest company to do business with – hands down.

Driven by success. A better experience.

Mid America Logistics was founded in 2007 as an asset-based temperature-controlled trucking company servicing the flower industry. Since inception the company has evolved into a full-service trucking, logistics, and technology development company. The company is based in Saint Louis, Missouri with offices in Charlotte, NC, Jacksonville, FL, Cincinnati, OH, Phoenix, AZ, Rogers, AR, Spokane, WA and Guadalajara, Mexico. They are one of the fastest growing Midwest based providers of Full, Partial and Less Than Truckload capacity in the CPG, Retail, Agriculture and Automotive industries, growing from $24M in 2014 to over $110M in 2018.

Mid America Logistics services the entire 48 contiguous United States, Canada and Mexico. It operates 24 hours per day, seven days per week with full capacity. It has preferred delivery status and experience in TSA controlled, government and free trade zones allowing for more reliable transit to and from ports of entry. It is also one of the few third-party logistics firms offering the ability to offer time specific pickup and delivery times through automated scheduling.

Mid America has developed a proprietary real-time secure SQL platform allowing for rapid development of supply chain execution services. They have utilized class leading market data allowing for predictive fuel and market index pricing of shipping corridors to optimize routing, transportation procurement and cost optimization. Mid America's development team has developed redundant mobile and text tracking solutions for real-time location, asset performance, truck diagnostics and driver behavior evaluation. The proprietary technology has a full suite of connectivity options such as EDI and API. Mid America offers its clients Complimentary Shipper TMS Licenses on a non-exclusive basis to perform full reporting, procurement, tracking, tendering and execution with both Mid America and other carriers.

Mid America Logistics operates under a culture of safety across all divisions of the business. It conducts regular Safety Audits both internal and third parties. Furthermore, they utilize Electronic Driver Logs for both drivers and developed technology to detect non-compliance with its carriers. Within the logistics division, it executes automated insurance compliance and matches VIN # tracking for all carriers to eliminate any chance of double brokerage. All employees attend scheduled safety meetings and training in all company meetings.

Mid America Logistics
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www.midamlogistics.com

MID AMERICA
LOGISTICS

Milestone

Sarah Johnson
Executive Vice President, Mobile Warehouse & Storage

Mission Statement:
Milestone delivers flexible transportation equipment solutions to our customers, while providing rewarding careers to our employees.

Core Values:
Milestone puts the customer at the center of everything we do and operates according to our core values of: Integrity, Customer Service, Teamwork, Flexibility, Innovation, Safety and Excellence.

Milestone
3050 W. Clay St., Ste. 300
St. Charles, MO 63301
866-706-1144
Sarah.johnson@milecorp.com
www.milecorp.com

With a combined fleet of more than 85,000 trailers, chassis and domestic containers, Milestone is one of the nation's leading and most comprehensive transportation lessors. Founded in 1995 and headquartered in St. Charles, MO, Milestone's team of seasoned commercial, operational and customer support professionals provide a broad range of transportation solutions to customers, operating from 65+ locations nationwide.

We offer our customers a wide variety of flexible leasing and rental programs, ranging from only a few units to over 10,000 units. Milestone meets the customer where they are, bringing solutions to solve their challenges, instead of offering the customer only one solution.

Our customers include trucking companies (over-the-road and LTL), third-party logistics (3PL) companies, package carriers, private shippers, railroads, steamship operators, beneficial cargo owners (BCOs), retailers, manufacturers and other companies throughout the transportation sector.

In 2019, Milestone implemented a Mobile Warehouse & Storage platform to become the only national provider allowing for warehouse flex space to meet the demands of the customers' business. "In recent years, many companies have struggled with rapidly escalating logistics and warehousing costs, in part driven by the massive growth of e-commerce," said Milestone CEO Don Clayton. "We worked closely with our customers to develop a product offering that delivers substantial cost savings and flexibility relative to traditional warehousing. Along with the significant investments we continue to make in late model equipment and the expansion of our branch network, we're positioned to deliver an unparalleled range of solutions to our customers."

In addition to our leasing and rental programs, we provide numerous consultancy services to help solve the challenges of the transportation industry, including:

- National Mobile Warehouse & Storage platform
- Committed peak and surge capacity programs
- Complex consulting and structured deals, including sale-leaseback transactions and fleet refresh programs
- Maintenance and telematics consulting and services
- Comprehensive management of third party transportation equipment assets
- Equipment acquisitions and remarketing

MILESTONE

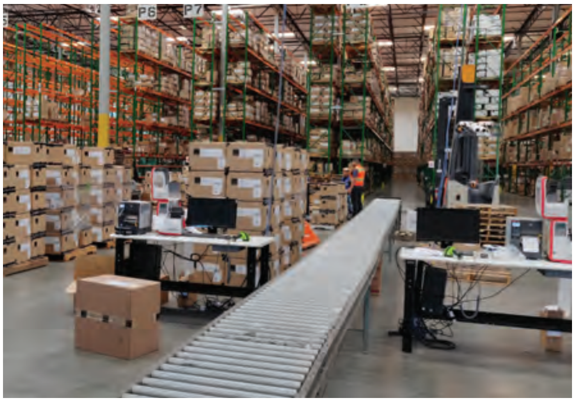
Need It Now Delivers and Its Specialized Subsidiaries

Eric Mautner
CEO

Changing How Businesses Do Shipping

- Servicing the Logistics industry for over 50 years
- Need It Now Operates in over 75 physical distribution facilities
- Deployment of the latest technology to deploy into any E-Commerce site: API, EDI, Need It Now APP and Website
- NO job is left unfulfilled with the Need It Now Delivers Triple Fleet Guarantee!
- Courier Delivery, Final Mile, Warehousing, Air Freight, White Glove, Retail Logistics with the **Gilbert Company**

Need It Now Delivers and Its Specialized Subsidiaries have serviced the logistics industry for over 50 years; providing quality logistics solutions to companies of all sizes. Need It Now Delivers operates in over 75 physical distribution facilities and combines today's latest delivery technology with a "real world fleet" to implement any logistics solution.



Verticals and Services

Courier - Routed and On Demand

On demand with vans or trucks providing routed, scheduled or recurring deliveries.

Work is performed on a national level. All drivers are vetted with BGC's and MVR's.

Final Mile White Glove Delivery from Our Customer's Docks

A big focus is on the 2-man residential *white glove* delivery. "There is no second chance for a good first impression." Services include: delivery and installation of home appliances and electronic equipment. We are the first choice delivery provider for many of the nation's largest retailers.

Warehousing

We warehouse or cross dock freight and set appointments to make delivery to residential homes or businesses. We also warehouse freight from many industries including general LTL freight and make the related delivery. Our customers include critical parts, medical related, cabinets, office supplies, and many more.

Retail Logistics

Our **Gilbert Company** subsidiary is recognized as a leader in retail logistics providing Deconsolidation, DC bypass, Consolidation, Retail warehousing, Ecommerce and fulfillment, and Retail Store Delivery. Our accounts include many of the largest and prestigious retailers in the U.S.

Air Freight

We are TSA approved. We ship domestically and internationally. Clients include professional firms, software companies, digital display companies and retailers.

Technology

Need It Now Delivers courier operations are consolidated into one technology platform. We have our own in-house driver and customer APP. The Need It Now APP is now available in the Apple or Google Play stores. Our technology capabilities allow us to provide an excellent customer experience. We designed our services particularly geared towards growth to the residential and retail consumers. Our logistics technologies include our own On-demand and routed software; a proprietary warehouse management system for our final mile warehouses; PCS and Bearware for the **Gilbert** store delivery program; proprietary Warehouse Management System for the **Gilbert** Services.

Need It Now Delivers uses state of the art technology to deploy into any e-commerce site, an established API or our Need It Now App and Website. Unlike other Crowdsourcing technology services, Need It Now Delivers stand behind every delivery with our APP Fleet, employee fleet and our courier network. No job is left unfulfilled with the **Need It Now Delivers *Triple Fleet Guarantee!***

Need It Now Delivers
37-18 57th St.
Woodside, NY 11377
212-989-1919
nindelivers.com

NEED IT NOW DELIVERS!

The Northwest Seaport Alliance

John Wolfe
Chief Executive Officer

About The Northwest Seaport Alliance
The ports of Seattle and Tacoma (Washington State, USA) unified management of their marine cargo facilities in August 2015. The alliance is a port development authority governed by the two ports as equal members, with each port acting through its elected commissioners.

The Northwest Seaport Alliance (NWSA) brings together two of the nation's premier harbors to form a single, integrated gateway for marine cargo. Our combined terminal facilities, carriers and ports of call provide unlimited options and flexibility to suit your unique supply chain needs.

We are one of the largest container load centers in North America. Strategically located in the northwest corner of the U.S., we offer shorter transits from Asia, and are the first and last ports of call for many transpacific liner services. We are also a major gateway to Alaska and Hawaii; more than 80% of trade between Alaska and the lower 48 states moves through our harbors. In addition to containers, we are also a center for bulk, breakbulk and project/heavy-lift cargoes, and automobiles.

Make better connections

Shorter transit times from Asia make The Northwest Seaport Alliance the natural port of choice for time-sensitive container cargo headed to the Midwest, Ohio Valley and the East Coast.

Our on-dock rail, international and domestic rail service options from two Class 1 railroads along with near-terminal transload warehouse facilities offer plenty of options and the flexibility to move cargo how and when you want. Our close proximity to the 2nd largest concentration of warehousing on the U.S. West Coast also makes us an ideal location for warehousing, distribution, and transload operations.

We pride ourselves on being proactive and performance-driven, and put unrelenting focus on delivering operational excellence and best-in-class service for our customers. And our commitment to working hand-in-hand with our supply chain partners to provide cost-effective, innovative shipping solutions is unparalleled. At the end of the day, it's all about helping you, the shipper, get the job done.

Make our competitive advantages yours:

- Big Ship Ready
- Room to Grow
- Hassle-free Connections
- Cargo Handling Experts
- Best-in-class Customer Service

THE NORTHWEST
SEAPORT ALLIANCE
Gateway to Solutions

The Northwest Seaport Alliance
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nwseaportalliance.com

nVision Global

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Founder & CEO

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nVision Global provides configurable technology solutions, enabling shippers around the world to optimize their transportation management and gain access to critical data. From our roots as a North American freight audit & payment provider, we now offer a full suite of logistics services that allows for end-to-end shipment visibility.

We possess more than 25 years of expertise in Freight Audit and Payment, Data Normalization, Claims Processing, Freight Rate Procurement and Management, Spot Quote/Auction Platform and Best in Class Business Intelligence and Analytics, all of which are located within our Impact Transportation Management System.

Customers rely on our modular software solutions to provide the visibility and data that they need to increase efficiencies and reduce overall transportation costs.

While each customer has similar issues, every customer is different! We provide configurable solutions that meet every customer's needs because our solutions are robust enough to address global issues but flexible enough to fit into your environment. Unlike our competitors, we tailor our solution to fit your needs; not the other way around.

nVision Global Highlights include:

- Global Single Source Solution
- Industry Leading Analytical Tools
- Multi-Lingual Staff
- Process Invoices From Over 198 Countries
- Experts in Processing all Transport Modes
- Six Sigma Methodology

Core Services include:

Global Freight Audit/Payment
- Single Global Platform
- 120 Standard Data Elements Captured
- Utilize Latest Imaging Technology
- Experts in Complex Account Coding
- On-Demand Closings
- Non-Commingled Payments
- Online Exception Management
- Global Support & Services Teams
- Sarbanes-Oxley Compliant
- Automated Match Pay Processing

Business Intelligence/Information Management
- Industry Leading Analytics Dashboard
- Global Mapping, Graphing
- Ad-hoc Reporting
- Least Cost Carrier Applications
- Single Source Data Warehouse
- Key Performance Indicator Development

Claims Management
- Loss & Damage Claims Processing
- Overcharge Claims Processing
- Service Failure Claims Processing
- nVision Global Managed or Self Service (Offered as a Software – SAAS)
- 87% Collection Rate
- Over 40 Years of Combined Experience

Freight Rate Procurement
- Online Procurement Software that Manages the Entire Procurement Project
- Transport Providers Submit Bids Online

Contract Management
- Online Management Portal
- Rate Approval & Imaging Process
- Rate Expiration Notifications
- Storage of Expired and Current Rates
- Standardized Pricing Templates Available

Transportation Management System (TMS)
- Global Freight Auto Rate and Auto Tender
- Shipment Tracking & Visibility
- Benchmarking
- Vendor Compliance Reporting
- EDI Compatible
- Vendor & PO Integration
- Shipment Creation & Rating
- Shipment Spot Bid & Approval
- Shipment Tender/Booking
- Shipment Visibility

Odyssey

Odyssey Logistics & Technology Corporation

Robert H. Shellman
President and CEO

Odyssey specializes in solving complex logistics challenges in the chemical, consumer and retail, energy, food, industrial and manufacturing, medical and metals industries.

Our clients trust us to deliver the solutions and data analyses that enable their internal logistics teams to make the smart decisions to keep them ahead of their competition. Our deep expertise and singular focus on transportation, our proprietary global technology platform, responsive client services and multi-modal supplier network consistently deliver the tailored, efficient logistics solutions they need.

Odyssey Logistics & Technology Corporation
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Blog

Organizations with diverse and complex transportation needs rely on Odyssey's innovative technologies to deliver thorough, high-value logistics strategies. Our clients benefit from expert tailored solutions across multiple transportation modes, backed by the power of our more than $3B freight network.

Complete, Global Services

With operations in North America, Europe, and the Far East, Odyssey's logistics programs and services are available in all modes of transport, including:

Intermodal

- Ocean container transport and repositioning
- Intermodal ISO tank – chemical and food grade
- Food grade flexitank services
- Metals; specialized Load and Roll Pallet (LRP) for safe, damage-free transportation

Trucking

- Flatbed and warehouse
- Bulk tank truck and ISO tank depot services
- Bulk brokerage; planning and contracting available
- Truckload and Less-than-Truckload; managed by client or Odyssey

Managed Services

- Domestic and International Logistics; N.A., EMEA, APAC
- Global sample fulfillment and distribution
- Freight management; single-source for contracting, track and trace, invoice audit/pay and claims support
- Rail; procurement, car maintenance, operations, service monitoring and reporting, fleet and car tracking
- Facilities; supply chain needs analysis start-up and network optimization projects

International Transportation

- Customs brokerage
- International freight forwarding; transport and technology
- NVOCC; full container and load shipping solutions

Partner with Us

Whether you choose to have us support all or a portion of your logistics services or to manage it yourself via our web-based dashboard, partnering with Odyssey gives you access to our exceptional logistics and technologies and returns transparency and control to your transportation needs.

Odyssey is here to help – contact us today.

Odyssey™ Innovating Logistics

Old Dominion Freight Line, Inc.

Greg Gantt
President and CEO

Vision Statement:
To be the premier transportation solutions company in domestic and global markets served.

Mission Statement:
To provide innovative solutions designed to exceed customer expectations, increase shareholder value and ensure the continued success of the OD Company and our family of employees.

Old Dominion Freight Line, Inc. (Nasdaq: ODFL) is a leading, less-than-truckload ("LTL"), union-free motor carrier providing regional, inter-regional and national LTL services through a single integrated organization. Our service offerings, which include expedited transportation, are provided through a network of more than 235 service centers located throughout the continental United States. Through strategic alliances, the Company also provides LTL services globally. In addition to its core LTL services, the Company offers a range of value-added services including container drayage, truckload brokerage and supply chain consulting. For 85 years, Old Dominion has been helping the world keep promises®.

Recently, Old Dominion was recognized with the following acknowledgements for company leadership in the industry:

- Mastio & Company, a global B2B research and consulting firm, ranked Old Dominion as the No. 1 National LTL carrier for an unprecedented ninth consecutive year.
- The U.S. Environmental Protection Agency recognized Old Dominion as a leader in freight supply chain environmental performance and energy efficiency for a fourth consecutive year.
- *Logistics Management* recognized Old Dominion with the Quest for Quality award as Top Multi-Regional LTL carrier for the ninth consecutive year.
- The American Trucking Association honored the Company with its annual Claims & Loss Prevention Award for 2018, which is given to the company that sets the bar for claims management, loss prevention and damage control.
- *Inbound Logistics* recognized the Company as a 75 Green Supply Chain Partner (G75) for the ninth consecutive year as well as a Top 100 Trucker for the seventh year in a row.
- Forbes Global 2000 recognized Old Dominion as one of the World's Best Employers in 2018, the only trucking company to make the list.

For more information about Old Dominion, visit odfl.com or call 800-235-5569.

Old Dominion Freight Line, Inc.
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Penske Logistics

Marc Althen
President

Products and Services
- Dedicated Contract Carriage
- Distribution Center Management
- Transportation Management
- Lead Logistics
- Customized Solutions
- Freight Brokerage

Penske Logistics engineers supply chain and logistics solutions that deliver powerful business results for market-leading companies. Through its design, planning, and execution, Penske gives you the confidence to move forward by boosting efficiency and driving down costs in your supply chain.

Industry-specific expertise

Our experts work with the world's leading companies across industries, from automotive and healthcare to food and beverage and retail. We offer specialized solutions tailored to your operations, production and market demands. Penske Logistics can help you:

- Ensure efficiency within your supply chain using smart technology
- Improve the product development cycle for a successful launch
- Drive dynamic supply chain solutions
- Achieve record savings

Our technical capabilities, depth of experience and practical creativity have been recognized by both our customers and the industries we serve, and our people deliver the results you need to succeed every day.

Innovative thinking

As a recognized industry thought leader, our award-winning teams bring fresh thinking to benefit you and your business. By tapping into our knowledge and know-how, you can start driving innovation that produces real value.

To keep ourselves and our customers on the cutting edge of industry trends and information, we partner with leading organizations such as the Council of Supply Chain Management Professionals, and sponsor well-respected longitudinal studies from top supply chain researchers at Penn State University.

Global capabilities

Penske Logistics has extensive experience successfully establishing operations in new territories and a proven ability to transfer knowledge across geographies and cultures. With offices in North America, South America, Europe, and Asia, we're committed to serving our customers anywhere, meeting the needs of suppliers, manufacturers and retailers around the globe.

That's how we deliver confidence. Let us show you how our winning strategies can work for you. Call 844-868-0818 or visit us online at penskelogistics.com today.

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PENSKE
Rental
Leasing
Logistics

Performance Team

Craig Kaplan
CEO

Our focus has always been on building partnerships through leveraging our expertise, human capital, technology, and integrity.

For over 30 years, Performance Team has been a logistics leader in providing retail and manufacturing industries with end-to-end supply chain services. Through our domestic hub network, nearly 9 million square feet of warehouse space, and 500 plus trucks, Performance Team processes, distributes and transports over $150 billion in wholesale goods annually. We've worked hard to earn and maintain a reputation as one of the leading e-commerce, distribution, trucking, and consolidation companies in the U.S. Here are a few ways we can help serve you and your customers more efficiently.

E-commerce Fulfillment & Distribution

Whether e-commerce, omnichannel, reverse logistics, pick and pack, transload, or carton-in carton-out, we have distribution solutions to meet your most basic or complex needs. PT has the infrastructure, material handling equipment, information technology, and management expertise to handle any task. We are proficient at adding flex space and human resources to adjust to your seasonal demands. Talk to us about how you can eliminate the need for costly real estate investments, construction and equipment, labor management and technology purchases. As your business expands and requires additional space or more sophisticated solutions, Performance Team will rise to the challenge to not only meet but exceed your strategic distribution needs.

Transportation

Our customers compete in fast-paced retail and manufacturing industries, demanding precise, accurate and informed transportation services. Performance Team has the skills and technology to support those time-sensitive requirements. No matter how difficult the mission, from drayage, store delivery, local pick-up, consolidation, and delivery to distribution facilities and stores, PT is ready to step-up to the plate and make a difference for your company.

Supply Chain Consulting

To Performance Team, logistics means strategy, execution and integrity. Our extensive experience in supply chain consulting enables us to analyze your business, devise custom, effective and flexible solutions to optimize the movement handling and distribution of your goods. Our logistics expertise can help you craft robust growth-oriented distribution networks, increasing your return on assets while managing overhead without losing sight of your goal—giving you and your customers the best service available.

Technology

Performance Team utilizes best-in-class technology to streamline and improve the movement and visibility of your products. Our WMS and TMS systems are integrated with our customer's ERP systems and provide real-time updates and reporting 24/7. This is handled through sophisticated enterprise application integration tools, utilizing well-understood EDI and API standards or proprietary interfaces as our customers require. Our API integration with Shopify and Magento enables seamless e-commerce integration.

PERFORMANCE TEAM

Performance Team
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www.performanceteam.net

Cliff Katab, President
marketing@
performanceteam.net

Locations
Los Angeles/Long Beach
Northern CA
Inland Empire
Dallas/Fort Worth
Shreveport, LA
Miami, FL
Charleston, SC
Louisville, KY
New York/New Jersey

Pharr International Bridge

Investing for the Future of Commercial Trade

Luis A. Bazán
Bridge Director

The Pharr International Bridge allows for safe, orderly and efficient crossings for both commercial and non-commercial vehicles. We do this by proactively implementing local, state, and federal rules and regulations as well as acting as a liaison with governmental agencies and business owners in the USA and Mexico. We deliver on our commitment by striving to excel in having the fastest crossing time, as well as being the only full-service commercial bridge in the region.

Pharr International Bridge
9900 S. Cage Blvd.
Pharr, TX 78577
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Fax: 956-223-2013
www.pharrbridge.com

The Pharr-Reynosa International Bridge serves as one of the most important commercial ports of entry for the U.S.-Mexico border. Pharr ranks 4th in the nation for trade with Mexico, behind only Laredo, El Paso and Otay Mesa, and as of 2018, ranks as the 7th largest border crossing in the U.S. in terms of value for imported and exported products.

Over 40,000 commercial trucks cross the Pharr Bridge on a daily basis, consisting of the following goods and commodities:

Top Exports

No. 1 Petroleum gases and other gaseous hydrocarbons
No. 2 Gasoline and other fuels
No. 3 Motor vehicle parts
No. 4 Computer chips
No. 5 TVs and computer monitors
No. 6 Insulated wire and cable
No. 7 Electrical supplies
No. 8 Plastic boxes and containers
No. 9 Computers
No. 10 Cotton

Top Imports

No. 1 TVs and computer monitors
No. 2 Avocados, dates, figs and pineapples
No. 3 Motor vehicle parts
No. 4 Insulated wire and cable
No. 5 Electrical boards, panels and switches
No. 6 Strawberries, blueberries and raspberries
No. 7 Laser-based medical equipment
No. 8 Cell phones
No. 9 Electrical motors and generators
No. 10 Vehicle audio systems

The Pharr border crossing plays an important logistics role in the global economy with direct connectivity to freight corridors through land, air and sea. The Pharr Bridge's strategic location, surrounding infrastructure, services and potential for growth, give a competitive advantage to the City of Pharr, Texas, as well as the City of Reynosa, Tamaulipas. In Reynosa, Pharr's cross-border trade benefits 11 industrial parks and commerce service centers with a total of 166 manufacturing plants. On the U.S. side, Pharr has 55 dry warehouses and 24 cold storage facilities and distribution centers with another 20 both dry and cold opening by 2020.

New infrastructure projects and improvements inside the U.S. port of entry, as well as in Mexico, will augment the current facilities and streamline the cargo inspection process, allowing for increased truck throughput, maximum efficiency and reduction of wait times. By 2020, the City of Pharr will invest over $30 million in infrastructure improvements. These enhancements, along with the new freight access road to Mexico customs, and the recently completed construction of the $90 million modernized "Aduana" in Reynosa, will benefit trade and foreign investments in the years ahead. Importers, exporters, domestic and multinational manufacturing companies have found that using the Pharr-Reynosa International Bridge as their preferred port of entry is a strategic advantage to conduct their operations, as it has transformed into profits due to the region's low cost of doing business and its direct distribution access to clients and consumers.

Pharr's steadfast approach to positioning itself as one of the top leading bridges in the nation will be even more pronounced once process improvements, such as Unified Cargo Processing (UCP), are implemented. By monitoring trends in the manufacturing industry, perishables industry and energy sector, Pharr is poised for unparalleled growth.

With over $34 billion in trade with the world, the Pharr Bridge continues to break import and export records. If you're ready to invest, relocate, expand and excel in logistics, choose the Pharr International Bridge. We are: Your Connection. Your Business. Your Bridge.

Pierbridge

Bob Malley
Managing Director

First-mile to Last-mile Shipping Technology that Solves Global-to-Local eCommerce Parcel Shipping Challenges

Why do thousands of shippers, developers, and logistics service providers trust Pierbridge technology to process millions of packages every year? Because we know shipping. Our customers and partners count on Pierbridge's expertise, technology, and unwavering support to roll out powerful shipping solutions across their supply chains. It's no wonder Transtream has helped our technology partners achieve the highest FedEx, UPS, and USPS certification levels. We deliver.

What makes us different?

Enterprise Class: Our enterprise shipping platform, Transtream, is built on a service-oriented architecture (SOA) that provides IT professionals with the controls and analytics they need to manage and monitor user permissions, security, and connections to hundreds of parcel and freight services worldwide. Whether you are a retailer onboarding thousands of users across hundreds of fulfillment centers, offices, and store locations globally, or a multi-national financial services company managing tens of thousands of desktops, or a 3PL supporting a shipper community, Transtream gives you the automation and transportation cost-savings tools you need to succeed.

Scalability: Transtream can be deployed on premise, accessed from our cloud, or implemented in a hybrid environment. Our APIs enable developers to augment their solutions with cartonization, rating, shipping, tracking, returns, and other transportation execution capabilities with sub-second response times. Transtream is resilient and redundant, ensuring high availability.

Flexibility: Our Composer UI design studio tools enable administrators to modify and adapt Transtream apps to role-specific processes across the enterprise. Configure business rules to control processes by location, user, or user group. Then modify or create new apps as business requirements change.

Connectivity: Transtream's unique Internet of Things (IoT) tool, HubCapp, makes it easy to securely connect in real time to on-premise data sources and devices (such as scales, thermal label printers, conveyors, and cameras) from the cloud. Developers can also use HubCapp to quickly embed interactive plug-and-play rating, shipping, tracking, and returns "widgets" within their websites or apps.

Experience: Pierbridge's executive team has led the parcel software industry for over 25 years, introducing innovation after innovation that have transformed the way businesses ship. We have a passion for helping customers and partners turn complex problems into simple solutions.

pierbridge
WISETECH GLOBAL GROUP

Pierbridge
508-630-1220
sales@pierbridge.com
www.pierbridge.com

PLS Logistics Services

Greg Burns
President & CEO

Founded in 1991, PLS Logistics Services is one of North America's largest third party logistics providers. Driven by technology, we provide dependable freight management, outsourced logistics and brokerage solutions across all industries and all major freight modes. With over one million loads moved annually, you can rely on our size, experience, and be 100% confident in all of your freight moves.

Solutions. Delivered.

Transport Topics TOP 25 FREIGHT BROKERAGE FIRMS
Inc. 500
SmartWay Transport Partner
Getting There With Cleaner Air

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888-814-8486
www.plslogistics.com

With additional offices in:
Pittsburgh, PA
Philadelphia, PA
Jacksonville, FL
Tampa, FL
Charlotte, NC
St. Louis, MO
Dallas, TX
Houston, TX
Phoenix, AZ

Who We Are

PLS Logistics Services is a tier-one, full-scale provider of transportation management services. As a non-asset provider, PLS' carrier network consists of over 60,000 trucking companies along with Class-1 railroads and major barge companies. PLS has the largest flatbed network in the industry. Our technology-driven solutions deliver true cost savings and service improvements. We have logistics experts across all modes and multiple industry verticals, including industrial, energy, CPG, and retail.

Solutions

Effective transportation management enables shippers to increase visibility, manage inventory, improve processes, reduce costs, and enhance service performance.

- **Brokerage Services:** For spot market freight shippers, our representatives can always find you the best rates and capacity while monitoring your shipments through delivery.
- **National Accounts:** For shippers looking for committed capacity, our logistics expertise and carrier network are the solutions for strategic portions of your distribution network.
- **Managed Transportation:** For shippers looking to improve service and lower costs, our team will work with you to find pain points and use actionable data to generate strategic results.
- **Inbound Freight Management:** To direct inbound freight, shippers have to take control. PLS inbound specialists monitor your vendors, making sure they don't use a carrier that costs you more.

Technology: Going PRO

With PLS PRO, you can oversee all freight shipping, from planning to freight settlement. With our proprietary TMS, you can operate, plan and optimize transportation activity by merging all shipping processes into one online platform.

- **PLS PRO:** Scalable, customizable and user-friendly. PLS PRO seamlessly integrates with your existing business systems and is designed to optimize shipments, consolidate billing and track KPIs.
- **PLS PRO LTL:** Uncomplicated, innovative and configurable. 2.0 is exclusively for LTL freight moves, with a carrier portal unlike anything on the market. It has a density class estimator, auto GL coding and digital BOLs.
- **Mobile Apps:** Innovative, reliable and responsive. PLS Live Track app, for client-shippers, enhances visibility with status notifications, reporting and map-based tracking. PLS Carrier Connect app, for dispatchers and drivers, permits drivers to instantly share their location, receive dispatch information and upload photos.
- **Continuing Innovations:** Set to be launched in early 2019 is PLS PRO 3.0. Cloud based, full service TMS, and cutting-edge technology. The dashboards are designed to measure shipping metrics and aid in future efforts with strategic reports.

Results

At PLS Logistics, we generate long-term results for our clients. We identify challenges and create custom solutions so that you can focus on your core competency.

PLS LOGISTICS SERVICES

Polaris Transportation Group

Mission
Founded in 1994, Polaris Transportation Group fosters a culture of mentorship and support for existing and future employees. In so doing we will create a customer experience unique to the transportation industry and we will continue to invest in the people and organizations that join our family of companies. We will support and recognize our social, cultural and environmental responsibilities to the communities we serve. Our reputation will be one of respect as an undisputed leader in our field and our company chosen over others as a trusted supplier and partner in the transportation industry.

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polaristransport.com
customercare@
polaristransport.com

For nearly 25 years, Polaris Transportation Group has been an award winning carrier of choice for Fortune 500 companies, 3PLs, global freight forwarders and small to medium size businesses alike. All divisions operate with the best technology and customer service available in the industry. A snapshot of their individual service strengths follows:

Polaris Transportation is the largest independently Canadian owned, cross border LTL carrier. They specialize in the shipment of dry goods, price by the hundredweight or by the skid and deliver industry leading transit times between Canada and the USA. Customer service is a top priority at Polaris. As an ISO 9001 registered company, you can rest assured your shipments will be delivered according to their stringent quality process.

Polaris Motor Freight Inc. is the U.S. headquarters of Polaris Transportation's LTL cross border operation, based in Cleveland, Ohio. They are a full truckload and LTL carrier in the northeast Ohio market and specialize in distribution of freight in Ohio's largest metropolitan area.

Polaris Global Logistics (PGL) investigates larger opportunities within their customers' supply chain. These solutions include global requirements where PGL acts as the critical link for the North American transportation and distribution segment. Within North America, they provide all modes of transport, warehousing, distribution and supply chain management services. They can effectively deliver to every zip and postal code within Canada and the USA on a daily basis.

J.G. Drapeau takes a dedicated partnership approach to the truckload transportation of hazmat commodities. They purchase and maintain equipment types to suit each customer's requirements including dry vans, heaters, reefers and an extensive chassis fleet for the transport of intermodal and sea containers. Safety is of the utmost importance and all J.G. Drapeau drivers and operational staff are certified through regular dangerous goods training.

Commercial Warehousing and Logistics (CWL) specializes in the warehousing of hazardous materials and is headquartered in Toronto, Ontario. Their operational facility and personnel are compliant with all regulations and safety protocols required for the handling of dangerous goods. If you need a presence in Canada, CWL's Toronto facility serves as the ideal distribution hub.

POLARIS TRANSPORTATION GROUP

Port Everglades

Steven M. Cernak
P.E., PPM
Chief Executive & Port Director

Port Everglades is Florida's powerhouse global gateway. A respected leader in trade, travel and financial stability, we create economic and social value by working in partnership with world-class clients. We achieve advancements focusing on efficient facilities, trade and cruise expansion, jobs growth, safety, security and environmental stewardship for our customers, stakeholders and community.

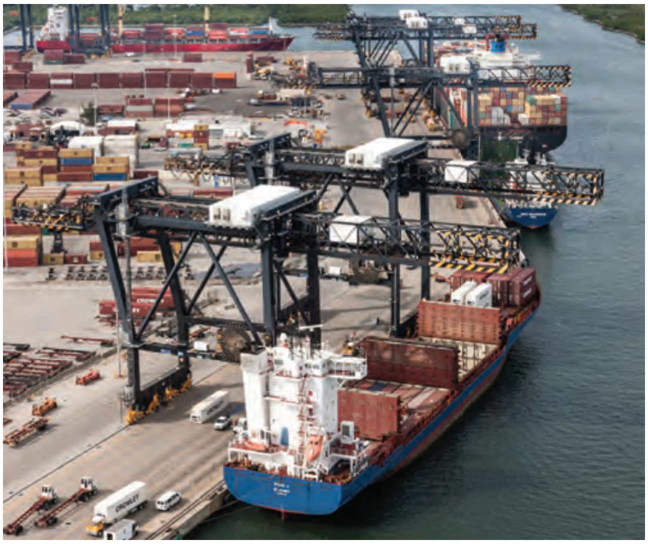
Port Everglades, a national leader in container ports handling more than one-million TEUs annually, serves as a gateway to Latin America, the Caribbean and Europe. Its enviable location in the heart of South Florida's consumer-rich population, is strengthened by intermodal connections that reach 70 percent of the U.S. population within four days.

The Port is moving forward with a public-private partnership to build a logistics center on Port property. The Port Everglades International Logistics Center, LLC (PE-ILC) will include approximately 240,000 square-feet of warehouse facilities with an attached 45,000 square-foot office building on 16.657 acres. The ground lease term is for 50 years. The project will contain warehouse, refrigerated warehouse and office space, and cross-docking facilities, which will enhance the services available to shippers using Port Everglades. The entire logistics center will be designated as a Foreign-Trade Zone (FTZ). Construction is anticipated to be completed in late 2020/ early 2021.

As the nation's leading gateway for trade with Latin America, Port Everglades handles approximately 15 percent of all Latin American trade in the U.S. and 37 percent of Florida's total trade in the region. Much of that trade is in the perishable market where Port Everglades is Florida's leading refrigerated cargo seaport, and sixth in the U.S.

Ongoing capital improvements and expansion ensure that Port Everglades is ready to handle future growth in container, cruise and petroleum traffic. Currently, more than $1 billion in infrastructure improvements are planned for the next 10 years.

New cargo berths and Super Post-Panamax gantry cranes are in store for the Port Everglades Southport Container Complex. This $437.5 million expansion, the largest infrastructure project in the Port's history, will allow for up to five new cargo berths by lengthening the existing



Southport Turning Notch from 900 feet to 2,400 feet. The project is expected to be completed and operational by 2021.

Part of this effort includes installing crane rail infrastructure for new Super Post-Panamax gantry cranes. Port Everglades has ordered three Super Post-Panamax container-handling gantry cranes at $13.8 million each, and has an option to purchase three additional cranes within five years.

To further enhance ship traffic at Port Everglades, the U.S. Army Corps of Engineers is moving forward with a progressive plan to deepen the Port's navigation channels from 42 feet to 48-50 feet and widen narrower sections of the channel for safe vessel passage. The project is currently in the preconstruction engineering and design phase, having received Congressional authorization in December 2016.

As Port Everglades continues to advance major infrastructure projects, all aimed at improving productivity, this South Florida powerhouse seaport will continue to serve as an ideal point of entry for products shipped around the world.

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PORT EVERGLADES
BROWARD COUNTY, FLORIDA
Florida's Powerhouse Port℠

Port Logistics Group

Jeff Wolpov
CEO

Mission Statement

- We are the gateway logistics experts, providing complete logistics services at major North American ports, enabling speed to market, inventory control & visibility, and fast, flexible, reliable service for our clients.
- Our clients benefit by leveraging our experience, agility, innovation, service excellence and national footprint to gain a distinct competitive advantage.

Port Logistics Group
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City of Industry, CA 91789
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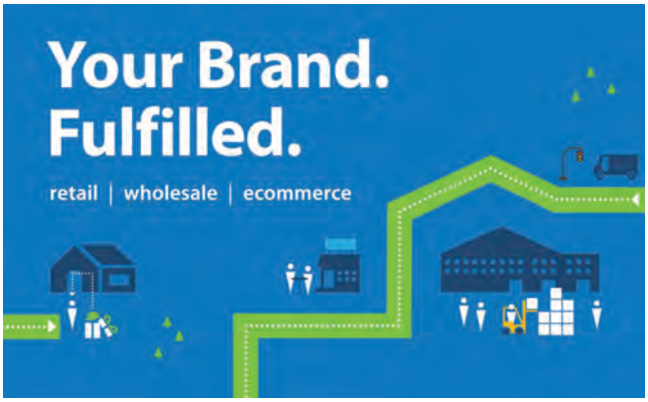
portlogisticsgroup.com

The Leader in Gateway Logistics Services

Port Logistics Group is the nation's leading provider of gateway logistics services, including value-added warehousing and omnichannel distribution, transloading and crossdocking, ecommerce fulfillment, and national transportation. With 6 million square feet of warehouse space strategically located in and around major North American ports, we provide the critical link between international transportation and the "last-mile" supply chain.



National Presence, Local Touch

When you work with Port Logistics Group, you'll be confident that our local operators know your products, your customers, and your challenges at each port of entry. From the moment your goods arrive, our team provides fast, reliable pickup and processing. Our retail industry knowledge allows us to **meet your most demanding customer specifications**. You can expect that same level of service **regardless of your U.S. point of entry**, giving you the flexibility to manage a complex and ever-changing global supply chain.

On the Shelf, On Time

At Port Logistics Group, we understand the urgency of getting goods from the port to store shelves on time and consumer-ready. Whether your products require **transloading, cross-docking, or storage and distribution**, our experienced staff and advanced material handling technology will get your products out of the port and onto store shelves.

A Full-Service 3PL

We've designed our locations to be a one-stop solution for our retail and manufacturing customers. We combine our gateway logistics services with **domestic vendor consolidation for store and DC delivery operations**. For our clients who need a complete distribution solution, Port Logistics Group provides **inventory management, order fulfillment, pick-pack, and kitting**. Our Value-Added Services teams provide a full range of **retail finishing services** (inspection, ticketing, sewing, pressing, re-pack, GOH processing, labeling, gift wrap) so your products arrive at their destination ready for sale.

Many Channels – One Provider

We specialize in solutions for retailers and manufacturers who need to combine a traditional retail distribution strategy with a B-to-C channel. Our proprietary WMS allows you to maintain a **single inventory** at multiple locations while fulfilling orders to your DCs, stores, or ecommerce customers **– seamlessly.**

Omnichannel Ready

Experience. Agility. Service Excellence. National Footprint. As you design your supply chain strategy, don't leave the critical link between global transportation and your last-mile supply chain to chance. **Trust Port Logistics Group – the Gateway Logistics Experts.**

Port Logistics Group

Port Jersey Logistics

Robert Russo
President & CEO

Port Jersey Logistics exists to empower the success of our People, our Customers and our Network. This is done by developing tailored logistics solutions through creating collaborative partnerships with our customers to ensure their expectations are exceeded so they can focus on their core business. This is achieved by dedicating ourselves to focusing on 4 key areas:

Relationships: Working together as trusted partners, openly sharing ideas and expectations.
Teamwork: Recognizing, respecting & aligning our goals with the goals of each stakeholder.
Productivity: Continuous process improvement, by working together to assess, plan, execute and then re-develop solutions for improved efficiency.
Culture/Ethics: Following the Golden Rule to operate with the highest level of integrity and respect.

Port Jersey Logistics
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www.portjersey.com

Port Jersey Logistics offers six decades of 3PL experience providing comprehensive and integrated services that meet a broad range of logistics requirements. We build customized one-stop solutions through our warehousing and transportation divisions, which cater to an array of products such as consumer packaged goods, specialty foods, food ingredients, health and personal care, alcoholic beverages, and more.

Distribution and Fulfillment

We provide warehousing, inventory management, and fulfillment through our public warehousing operation, Tyler Distribution Centers, Inc. and our contract warehousing operation, 21st Century Distribution Centers, Inc. All facilities are food grade, FDA registered, AIB approved with superior ratings, and USDA Organic Certified. Manufacturers, importers, exporters, distributors and retailers benefit from our focus on compliance and technology in developing solutions.

Value Added Services

As a comprehensive solution, Tyler Distribution and 21st Century Distribution provide:

- Retailer compliance
- Vendor consolidation
- E-commerce fulfillment
- Secondary packaging and assembly
- Shippers/point-of-purchase displays
- Ink jet printing & heat shrink packaging
- Labeling and ticketing, pick & pack
- Inventory, shelf life, lot code management

We have the space, capacity flexibility and specialized capabilities to cover your warehousing and distribution requirements. An integrated Warehouse Management System (WMS) guides our ambient and temp-controlled warehousing operations, ensuring accurate inventory visibility and order fulfillment. We have the resources to provide fast and effective dedicated solutions anywhere in the United States.

Transportation Management

Our national transportation management and logistics services operation, Continental Logistics, Inc., provides customers the human and technological resources that coordinate all of the logistics prior to pick-up and see everything through to ensure delivery.

A dedicated Logistics Coordinator, combined with our interconnected Transportation Management System (TMS), manages your domestic supply chain to get things done the right way, on time and on budget! Continental Logistics offers:

- Retailer Compliance
- Import / Export Drayage
- Less than Truckload (LTL) /Full Truckload (FTL) / Intermodal
- Project Management
- Cross Dock Transportation
- Vendor Consolidations

Scalable, Customized Technology-Focused Solutions

Beyond warehousing and transportation, Port Jersey provides added value by developing solutions tailored to the needs of our clients—and their clients. We exceed customer expectations by integrating transportation and warehousing services with a focus on compliance and technology. Our warehousing and transportation operations are systemically integrated to make sharing information simple. Automated data flows through Electronic Data Interchange (EDI) and file sharing through File Transfer Protocols (FTPs) allowing our partners to focus on managing the business rather than being tied up by daily operations. We provide real time web access to both our WMS and TMS systems and can customize and schedule reports for when you need them.

Port of Galveston

The Port of Galveston is one of Texas' major seaports, relying on any local tax dollars for operations. The Port generates current annual operating revenues of approximately $43.5 million, provides an annual estimated economic impact to the State of Texas of over $2.3 billion and generates approximately 13,890 jobs.

The Port of Galveston, a Landlord Port with facilities and property approximating 850 acres on Galveston Island and adjacent Pelican Island, facilitates the movement of a diverse mix of domestic and international cargoes that deliver value to the region and the state. Situated on the Gulf Intracoastal Waterway and the Interstate Highway System (I-45), the Port is also served by the two major western Class 1 railroads, the BNSF Railway Company and the Union Pacific Railroad. The Galveston Ship Channel has an authorized depth of and is currently maintained at 45 feet, with channel widths up to 1,200 feet. The Port serves the cargo, cruise and offshore oil and gas industries simultaneously.

One of the top fifty ports in the nation and one of the busiest seaports in Texas, the Port moves an average of 4.1 million short tons of cargo each year. This includes export grain, fertilizer and other dry and liquid bulk products, wind turbine towers, blades, nacelles and other components, high and heavy cargoes, project cargoes, new, used and personally owned vehicles, agricultural machinery, construction equipment and numerous other types of roll-on/roll-off cargoes, household goods, refrigerated fruit and produce, liner board, military cargo, and some containerized cargo. The Port maintains Roll-On/Roll-Off (Ro-Ro) terminal facilities in both the east and west end areas of the Port, currently serviced by 5 regular RoRo shipping lines. They are Wallenius Wilhelmsen Logistics (WWL), American Roll-On Roll-Off Carrier (ARC), "K" Line, MOL ACE ("ACE" stands for Auto Carrier Express), and ACL-Grimaldi Line. Nearly all of the Port's facilities have direct access to the Port's terminal railway services, Galveston Railroad, LP, which interchanges with the Class 1 railroads.

The Port of Galveston is also the Grantee for Foreign-Trade Zone (FTZ) No. 36, an Alternative Site Framework (ASF) Zone with activated sites located on Galveston Island Port facilities, Pelican Island and other locations in Galveston County.

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Port of Long Beach

Mario Cordero
Executive Director

Mission
The Port of Long Beach is an international gateway for the reliable, efficient and sustainable movement of goods for the benefit of our local and global economies.

The Port of Long Beach is the premier U.S. gateway for trans-Pacific trade and a trailblazer in innovative goods movement, safety, environmental stewardship and sustainability. As the second-busiest container seaport in the United States, the Port handles trade valued at more than $194 billion annually and supports 1.5 million trade-related jobs across the nation, including 300,000 in Southern California.

As the industry enters the “Big Ship Era,” the Port of Long Beach is one of the few U.S. ports that can welcome today’s largest vessels.

Founded in 1911, the Port serves 175 shipping lines with connections to 217 seaports around the world. Goods moving through the Port reach every U.S. congressional district.

The Port encompasses 3,200 acres with 31 miles of waterfront, 10 piers, 80 berths and 66 post-Panamax gantry cranes. In 2018, the Port handled more than 8 million container units and expects to see even more growth in 2019.

Led by the five-member Board of Harbor Commissioners and Executive Director Mario Cordero, the Port is investing $4 billion this decade in a capital improvement program, the largest in the nation. It is building some of the most modern, efficient and sustainable marine facilities in the world to accommodate bigger and bigger ships, while generating tens of thousands of new jobs in the region.

The two largest projects are the replacement of the aging Gerald Desmond Bridge, budgeted at nearly $1.5 billion, and the Middle Harbor Terminal Redevelopment Project at $1.5 billion. Middle Harbor will be the most technologically advanced container terminal in North America, capable of moving more than three million container units annually while cutting air pollution by half from previous levels. The new landmark, cable-stayed bridge will be safer and provide better Port access than the current span.

The Port of Long Beach prides itself on its culture of customer service and the strong relationships it maintains with industry, community, environmental advocates and partner agencies. It has received many accolades from government and industry for its landmark green initiatives, and industry leaders have named it “The Best Seaport in North America” in 19 of the past 23 years.

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Port of LONG BEACH
The Green Port

Port of Los Angeles

Gene Seroka
Executive Director

The Port of Los Angeles encompasses 7,500 acres of land and water along 43 miles of waterfront. It features 27 passenger and cargo terminals, including automobile, breakbulk, container, dry and liquid bulk, and warehouse facilities that handle billions of dollars worth of cargo each year.

When measured by container throughput, the Port has consecutively ranked as the number one port in the nation for the last 15 years.

THE PORT OF LOS ANGELES

Port of Los Angeles
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Phone/TDD:
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www.portoflosangeles.org

The Port of Los Angeles—America's Port® and the premier gateway for international commerce—is located in San Pedro Bay, 20 miles south of downtown Los Angeles. This thriving seaport not only sustains its competitive edge with record-setting cargo operations, but is also known for its groundbreaking environmental initiatives, progressive security measures, diverse recreational and educational facilities, and visitor-serving LA Waterfront.

The Port is currently increasing supply chain efficiencies by continuously exploring new technologies and creative ideas that support business competitiveness, environmental sustainability, security, and efficiency. The Port is working with supply chain partners to improve the efficiency of marine terminal, trucking, rail and vessel operations.

With an exceptional credit record, the Port maintains an Aa2 bond rating, the highest assigned to any seaport in the United States, operating without the benefit of taxpayer support. The Port also wields tremendous economic impact, generating employment for more than 3.3 million Americans nationwide. In California alone, nearly 1 million jobs are related to trade through the San Pedro Bay Port Complex.

Facilitating global trade while protecting the environment is a delicate balance at the nation's largest trade gateway. To strike that balance, the Port of Los Angeles is leading the way internationally when it comes to reducing air emissions, improving water quality, modernizing facilities and cultivating the development of new technologies.

The aggressive clean air program at the Port of Los Angeles shows it has reduced pollutants up to 97% in the past 10 years, measured by a detailed inventory of emissions of key pollutants from ships, trucks, locomotives, cargo-handling equipment and small harbor craft. At least half of container, refrigerated and cruise ships calling at the Port are required to run their auxiliary engines on shore-based electricity, which eliminates significant emissions at berth.

Complementing its busy terminal operations with green alternatives, the Port of Los Angeles remains committed to managing resources and conducting Port developments and operations in both an environmentally and fiscally responsible manner.

The Port of Los Angeles: America's Port®.

ProTrans

Gary Cardenas
CEO

For over 25 years, ProTrans has been providing innovative customer solutions. We are a full-service 3PL provider offering logistics design, carrier procurement, supply chain management and transportation management.

Who we are

ProTrans is part of ProTrans Holdings, a private shareholder group, which includes ProTrans International, Inc., TOC Logistics International, Inc. and Millennial Transport Services.

ProTrans is a non-asset based US logistics management company headquartered in Indianapolis, IN. We operate service centers throughout Canada, Mexico and the United States.

What we do

We are committed to providing solutions that expand our customers' resources through value-added service enhancements, leading-edge technology development and highly skilled customer support specialists.

How we do it

We create your unique logistics plan, utilize our versatile management and offer strategic control with our proprietary software and analytic tools; you control your shipments anytime and anywhere.

ProTrans Solutions

- **Turnkey third-party logistics (3PL):** Our 3PL solutions, including supply chain management, supply chain design, transportation procurement and route management, are designed to fulfill the increasingly complex demands of today's logistics.
- **Optimization through Consolidation:** We move more of your materials with fewer trucks, reducing your carbon footprint while keeping costs down and efficiencies high.
- **Optimization through Pool Distribution:** Our pool distribution solutions are an extended option available to provide cost savings in your supply chain. Our flexible network allows us to receive, validate and inventory your goods for final delivery in a particular geographic region thereby greatly reducing redundant shipping costs and unnecessary handling.
- **Unplanned/Expedited Freight Management:** ProTrans Freight Management solutions move your freight in the necessary time frames with real-time visibility by using dedicated teams focused on monitoring and tracking your loads.
- **Comprehensive Materials Management:** Flexible warehousing solutions that respond to your unique inventory and fulfillment needs.
- **Simplified Cross Border Processing**: Multiple validation and verification options for when you need to move inventory across the border.
- **Intellectual Talent:** ProTrans overall success lies in our people. We've made a full commitment to our Talent Development Program, an in depth program covering all departments in our company.

INBOUND LOGISTICS TOP 100 3PL PROVIDER 2018

ProTrans International, Inc.
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www.protrans.com

PROTRANS®
A perfect fit

PSS Distribution Services

Mission Statement
The team at PSS Distribution Services Co. is committed to providing reliable distribution, transportation and packaging services while maintaining a safe work environment at an acceptable level of return.

To facilitate continuous improvement and increase customer satisfaction by identifying, communicating, training and promoting the use of quality principles, concepts and technologies; and thereby be recognized throughout the Eastern United States as the leading authority on and champion for public and contract warehousing and logistics services provided by third parties. We are committed to inspect, count, track and service promptly and efficiently all inbound and outbound movement of product for our customers. Employee education and training are based on this philosophy.

PSS Distribution Services
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Based in the heart of the Northeast region, PSS continues to position itself as a leader in quality logistics solutions.

With 1 million square feet, PSS has continued to experience extensive growth in the areas of food, grocery and consumer products.

PSS had several accomplishments in 2018 including:

- Named Warehouse of the Year by Barilla America.
- Continued investment in technology including an aggressive platform to provide efficient services in the E-Commerce sector.
- Growth in this area as well as the addition of E-Commerce specific software integration with all small parcel options and specific material handling equipment have enabled us to provide solutions in this rapidly growing segment.

Continued Growth

Powered by Softeon, PSS continues to experience significant growth in the packaging and value added side of the business: kitting, display and shipper builds, retail labeling and assembly. This along with Shelf Life Management, has enabled PSS to continue to be a key component in our clients' supply chains.

Distribution services continue to be the primary function of the company. Modern facilities, strategically located between New York, NY and Philadelphia, PA, offering total distribution services including order selection, cross dock services, just in time movement and start-to-finish inventory management.

Located in the heart of the Northeast corridor, PSS Transportation continues to be a significant part of the truckload and LTL shipping networks as well as a comprehensive Direct Store Delivery and Consolidation program for premier Grocery chains such as Shop Rite and Price Rite.

The combination of Distribution, Transportation, Packaging and E-Commerce expertise in AIB audited and maintained facilities along with 21st century real time technology will assist PSS in continued growth within the region.

PSS DISTRIBUTION SERVICES

Purolator International

We deliver Canada

Mission Statement
To be the best in our industry at shipping and logistics for companies delivering to, from, and within North America.

Purolator International is the established leader in helping U.S. businesses ship to, from, and within Canada. That expertise has formed a foundation that enables Purolator International to deliver superior service across a full portfolio of shipping and logistic products to businesses throughout North America as well as offer specialized services within the U.S.

Our customers' requirements are as varied as the industries they represent. That's why we don't offer cookie-cutter supply chain solutions. By customizing a mix of proprietary transportation management and specialized services that suit their businesses, we make shipping seamless and hassle-free at every point along the supply chain. Through our native Canadian market expertise, comprehensive network, and unmatched border-crossing proficiency, we have the capabilities to meet any logistics needs for cross border. These capabilities, along with our proven transportation management expertise, let us go beyond Canada and offer other solutions.

The key to our past success and the basis for all of our services—new and old—is our emphasis on customer focused transportation management. Our entire organization has been built around the principle that our customers deserve a proactive partner who makes it easier to ship. No matter the service, we offer complete visibility and ultimate peace of mind—we call this the PuroTouch.

Services

- **Elite:** Our standard shipping services set the bar for transit time and accuracy, but we know there are times when businesses need to go above and beyond. For these urgent shipments, Purolator International's Elite service is the go-to option. This premium, guaranteed service delivers time-sensitive shipments anywhere in the world, regardless of the size, destination, or time of day.
- **Express:** Our Express services include guaranteed next-day and second-day delivery. Packages are tracked every step of the way to offer clear visibility, and with a track record of industry-leading on-time performance and guaranteed delivery points, businesses can be sure their package is where it needs to be when it needs to be there.
- **Expedited Forwarding:** Businesses have deadlines to meet and inventory levels to maintain. Our business is making sure our customers' businesses deliver. We move 400,000 pounds of freight each night and 100 million pounds each year. Our highly competent logistics experts provide air and ground solutions through an integration of information, transportation, inventory, warehousing, tracking, material handling, and packaging.
- **Parcel:** Not every package a business ships has to get there yesterday, but that doesn't minimize its importance. Parcel is our most cost-efficient delivery service for documents, catalogs, and similar packages to and within Canada. For ecommerce shippers, our PuroPost service has all-in-pricing and a 2-8 day service guarantee that covers Canada completely providing you even more options to get your shipments delivered quickly and reliably. And our PuroPostPlus solution goes even further with 2-5 day delivery.

Purolator International also offers a wide range of additional services to help create the most efficient supply chain. From the best transportation routing, to the proactive management and tracking, to reliably quick transit times with incredibly flexible integration options, we provide a service you can count on.

Purolator International
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Phone: 1-888-511-4811
Fax: 516-938-2395
purolatorinternational.com

R2 Logistics

Ben Gase
Founder and CEO

The R2 Way

Obsess Over The Customer
Do It Now Attitude
Take Responsibility
Be Different
Always Think Positively
Compete, Compete, Compete
Over-Communicate
Do Your Job
Play The Long Game
It's About The Team

WHO WE ARE

Founded in 2007, R2 Logistics is a global provider of transportation services and logistics solutions. As a third-party logistics company, we provide access to thousands of contracted transportation providers. With offices located across the United States we have the capacity to resolve all your shipping needs. Backed by game-changing technology and our culture for Reliable Service and Relentless Passion, we've built a strong reputation as an industry leader.

CUSTOMER SERVICE IS PRIORITY NUMBER 1

At R2 Logistics we pride ourselves on offering a superior customer service experience. Whether you're a Fortune 500 company or a small family owned business you are valued by R2 Logistics. Our Customer Service Advisory Board was formed to ensure every customer across the board is given the time and attention they deserve. Comprised of a member from each of our offices, this group holds a weekly conference call to hold everyone accountable by discussing any service issues or successes. The team also meets twice annually at our corporate headquarters to brainstorm new and innovative ways to offer the best customer service the transportation industry has ever seen.

TAKING TECHNOLOGY FURTHER

R2 Logistics is superior to other 3PLs by how we utilize technology to ensure the highest level of accuracy and service. Our TMS creates data that help shippers streamline tasks and reduce costs. With an integrated customer portal, our tools deliver real-time connectivity across the supply chain. Whether you need transparent visibility to your operations, optimization of your business processes, or strategic data and reporting to help drive decisions, R2 Logistics has the tools you need.

SERVICES & CAPABILITIES

- Supply Chain
- Truckload
- LTL
- Expedited
- Intermodal
- Air
- Specialized

R2 Logistics
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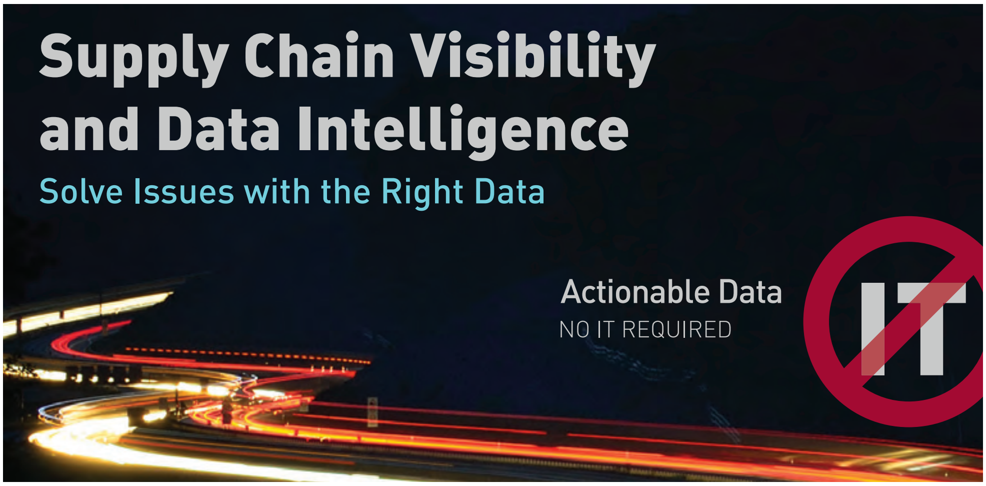
www.TheBest3PL.com

RateLinx

Shannon Vaillancourt
President and Founder

Corporate Mission:
Transform logistics to help companies improve their supply chain management by developing integrated data intelligence software and offering a data-first service approach to solve problems.



RateLinx helps companies by accelerating intelligence in their supply chain. Starting with the right data, RateLinx helps customers gain complete supply chain visibility, solve issues, save costs and build world-class logistics strategies through Integrated Data Intelligence℠. As the leading supply chain software and services company with the only completely integrated Data-as-a-Service (DaaS) technology platform, RateLinx uses a data-first approach called Logistics in 3D to diagnose the underlying problem and then develop and deploy a tailored solution—within 45 days and without requiring internal IT support.

Diagnose

First, we diagnose your current situation starting with the right data, not just aggregated data. Intelligent Invoice Management℠ (IIM) captures data at the source and automates cleansing and standardizing. Carrier invoice, track & trace, shipment, and order data are merged and normalized in real time to provide missing intelligence around a company's logistics.

Develop

With IIM's standardized data foundation, our advanced analytics engine helps you develop strategies to address stubborn, underlying problems. Strategies are tested in the modeling environment to reveal any unintended consequences before making changes. Trusting data-driven decisions will lead to improved supply chain management and cost reductions.

Deploy

New strategies in place, you can monitor the processes in real time for complete visibility. When you need a new report or attribute added, our Managed Services team can turn your request around in a day or less. Customized with your goals and constraints, our software delivers data intelligence to quickly deploy your new strategy and solve problems faster, accelerating savings.

Preventing Late Deliveries Delivers Positive Financial Results

Our Radar Track & Trace monitors orders before they are picked up by the carrier, alerts you if orders are in danger of being late, and proactively identifies the most cost-effective way to expedite the shipment. Unlike other tracking solutions, Radar Track & Trace data is integrated with your TMS planning function to ensure that the carrier pick-up date and the service or mode selected will allow the shipment to arrive on time. Because Radar Track & Trace data is integrated with the carrier invoice in IIM, you'll have analytics around the financial impact of the shipping service and related upstream data about the service itself.

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Blog

RateLinx
Integrated Data Intelligence℠

Red Classic

Outstanding Experiences. Exceptional Outcomes.

Dave Glancy
President

Mission Statement
Our mission is to be the safest provider of transportation, logistics and maintenance solutions to enable our customers and communities to thrive.

Services
- Truckload
- LTL
- Dedicated
- Intermodal
- Flatbed
- Drayage
- Refrigerated
- Logistics Solutions
- Managed Transportation
- Fleet Maintenance

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www.redclassic.com

Who We Are

At Red Classic, we know that getting things where they need to go—on time and cost efficient—is what shippers need. As a wholly-owned subsidiary of Coca-Cola Consolidated, the largest Coca-Cola bottler in the U.S., Red Classic has been serving the world's best-known brand for more than 100 years. Today, we drive operational efficiency for customers across dozens of industries by offering a full range of transportation and fleet maintenance solutions customized for your business needs. Great brands trust us with their products because we deliver outstanding experiences and exceptional outcomes every day.

Transportation Solutions

With regional company-owned assets, a growing over-the-road (OTR) division and a network of more than 20,000 carrier partners managed through our full-service brokerage department, we have the reliable capacity your business demands. We offer truckload, less than truckload (LTL), dedicated and other logistics solutions for raw materials and finished products throughout the continental U.S. and Canada.

Fleet Maintenance Solutions

With more than 20,000 assets under management and 80+ full-service maintenance shops, we provide customized maintenance solutions that reduce downtime and labor costs. Our skilled technicians service more than 150 equipment types including light duty vehicles, material handling equipment, class 7 and 8 tractors and everything in between.

The Red Classic Difference

- **Safety Comes First.** Safety Comes First is Red Rule #1. We invest in extensive, systematic training and the latest technology to ensure our drivers, our equipment and our freight arrive safely.
- **Assured Capacity.** As an asset-based 3PL and one of the largest beverage haulers in the U.S., we understand the demands of today's shipping environment. Our growing network means we can expand with your business as your need for capacity evolves.
- **Industry Expertise.** Our experienced logistics team has the expertise to address the most complex and demanding shipping environments, saving you time and money.
- **Unparalleled Service.** Our commitment to extraordinary customer service breeds a culture of partnership with our customers that is second to none. We're proactive and responsive, so you can rest easy knowing your freight is handled with care.

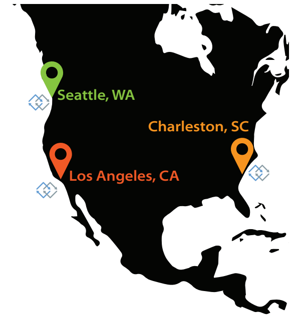
Our Promise to You:

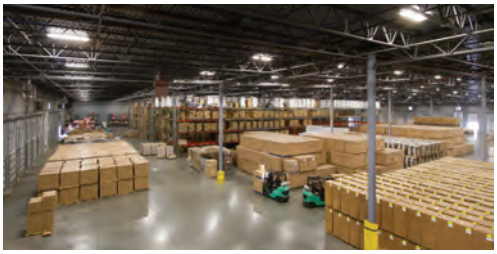
- We want you to be delighted with every interaction.
- You can count on us to operate with integrity, always.
- Our expertise is there for you, whenever and wherever you need it.

Experience what our customers already know – no matter what you need, Red Classic delivers.

RED CLASSIC®

Regal Logistics





REGAL LOGISTICS®

From Port to Sale™

A **Third-Party Retail Distribution Provider** with 50 years' experience, **Regal Logistics** delivers innovative shipping solutions, state-of-the-art systems, lower costs and better results.

We offer comprehensive services, from Port to Sale, for North American companies importing from Asia and specialize in weekly replenishment services and distribution.

Customers benefit from our experience and expertise shipping to 800+ retailers and specialty stores, industry specific solutions and streamlined logistics processes that improve product flow.

"Regal Logistics is an example we use when instructing new vendors on our expectations for routing and loading their freight." Walmart

"We chose Regal Logistics to be part of our new transportation initiative for high volume shippers." Amazon

Advanced information technologies including EDI, real-time shipment tracking, warehouse and transportation management systems exceed standards and accelerate goods to market.

2.4 million square feet of high-velocity Distribution Centers in significant port gateways feature fulfillment, full carton, cross docking and small parcel services.

What can we do for you?

Regal Logistics
866-300-5580
regallogistics.com

Rinchem Company, Inc.

Streamlining the Chemical Supply Chain

Chuck Breinholt
President

Our Mission:
The mission of Rinchem Company, Inc. is to be the most responsive provider of Chemical Management Services any of our stakeholders ever experience. Responsiveness is identifying, documenting and fulfilling every expectation and requirement of our stakeholders. Stakeholders include customers, employees, communities, regulatory authorities and owners.

Locations:
- United States
- Taiwan
- Singapore
- South Korea
- Israel
- Ireland

Associations:
- ISO 9001
- IWLA Member
- WERC Member

Rinchem Company, Inc.
6133 Edith Blvd. NE
Albuquerque, NM 87107
1-505-345-3655
1-888-3PL-CHEM
info@rinchem.com
www.rinchem.com

Managing the Global Chemical Logistics Network

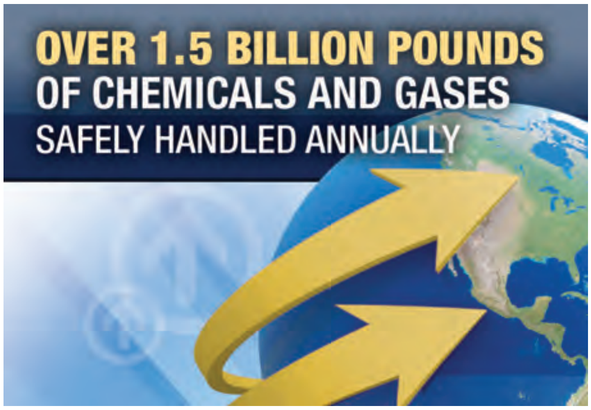
Rinchem Company, Inc. is a lead logistics provider with proven expertise in creating and managing safe and efficient supply chains for high purity, pre-packaged chemicals and gases. We apply three decades of expertise and innovation to provide the most reliable, efficient, and cost-effective solutions for our customers. Our services include global warehousing, transportation, freight forwarding, training and consulting.

Rinchem operates a broad network of temperature-controlled, hazardous materials compliant warehouses at locations across North America and in parts of Europe, the Middle East and Asia. Rinchem's transportation and warehousing networks are linked through Chem-Star®, a secure, Internet-based logistics management application and reporting interface that provides customers with real-time visibility into inventory location and status.

Rinchem Services and Areas of Expertise

Our areas of core competence include:

- **Lead Logistics Solutions:** Coordination of all logistics-related activities and suppliers, including analysis of and recommendations regarding modes of transport, opportunities for consolidation, customer service performance levels and opportunities for supply chain improvement
- **Warehousing:** Public or dedicated, temperature-controlled or ambient, regulated or non-regulated warehousing and handling of high-purity, pre-packaged chemicals, gases and other materials
- **Transportation:** Intermodal, over-the-road transportation, cross docking or local delivery of wet or dry chemicals or other materials in bottles, cases, drums, totes or other specialized containers
- **Freight Forwarding:** International shipment of regulated, temperature-controlled chemicals and gases, including import, export, customs clearance, shipment consolidation and deconsolidation, drayage to and from the port, bonded warehousing, cross-docking, transloading and door-to-door delivery services.



Chemical Management Expertise and Logistics Network Optimization

Rinchem's core area of expertise is our ability to safely and efficiently manage chemicals and gases, achieving full regulatory compliance and a reduction in risk. Unlike many general purpose third party logistics providers, Rinchem's assets, employees, systems, processes and expertise are customized for the management of chemicals and gases. Allowing Rinchem to manage the chemical supply chain enables companies to focus greater time and resources upon their own core competencies.

Rinchem engages in long-term, strategic relationships with its customers to systematically drive cost, risk and waste out of the supply chain. Strategies for improvement include the utilization of systems and expertise that deliver greater visibility, flexibility and control, leading to inventory reduction and improved service levels. Rinchem also helps customers to consolidate and optimize shipments and routing, reducing a company's environmental footprint, as well as overall logistics costs.

RINCHEM COMPANY, INC.
CHEMICAL MANAGEMENT SERVICES

Romark Logistics

Marc Lebovitz
President

Mission:
Delivering customized logistics solutions built on an unwavering commitment to providing outstanding service for our customers.

Our core values include:
- As a family-owned company with integrity, we understand the importance of long-term relationships.
- Service excellence and attention to detail that translates into the highest standards;
- Providing the utmost efficiency and ensuring a best-in-class industry benchmark;
- Remaining adaptable, independent, productive and environmentally proactive;
- Continuous improvement - recognizing the status quo is never good enough;
- Keeping facilities secure from threats and theft to freight in our care; and
- Keeping our associates safe and injury-free is one of our most important values.

Romark Logistics
822 South Avenue West
Westfield, NJ 07090
Phone: 800-276-2719
sales@romarklogistics.com
www.romarklogistics.com

Founded in 1954, Romark Logistics has been a pioneer in the supply chain and logistics sectors. As a top third-party logistics and cold-chain provider in North America, we service some of the leading food, beverage, pharmaceutical, and retail customers in the world.

With millions of square feet of industrial space throughout the U.S., Romark has established itself as a premier third-party logistics company that is people-driven and results-focused. The company's tagline, "Personalized Service...Always" drives our team to create more tangible results for customers, with solutions that are flexible and results that are proven. Many of our customers have been with the company since our inception, which is indicative of our ability to grow and meet changing needs.

A key to our success has been the diversification of the company's operating businesses, as we have acquired some of the leading packaging, transportation and warehousing companies in the United States. With our strategic investments in automation and technology, Romark has masterfully blended these acquisitions into strong, value-added business units that help provide our customers with personalized, dependable solutions, which include:

Distribution and Fulfillment Solutions

Romark offers contract and public food-grade warehousing solutions and specializes in temperature-controlled requirements. Our extensive history and knowledge allow us to offer a full suite of services including short and long-term storage, cross-dock operations, e-commerce fulfillment, packaging, assembly and JIT delivery, plant support, reverse logistics, and supply chain consulting.

Transportation Management

Whether you need dry or temperature-controlled applications, we can provide customized transportation solutions, including dedicated fleet management, freight management, transportation brokerage, over the road transportation, pool distribution, white glove service, and shuttle service. Our offerings include both asset and non-asset-based solutions.

Packaging/Creating Value-Added Solutions for Our Customers

Our company has a proven record of excellence in custom packaging services to receive, package, store, and distribute products and displays to retail stores across the nation. Whether you require customized kit assemblies or primary and secondary packaging, Romark provides solutions that deliver efficient and superior results.

Real Estate Development and Facility Design

With more than 65 years' experience as an owner and developer of industrial real estate, we understand what it takes to run a modern distribution facility. Applying this operational expertise, we specialize in providing state-of-the-art facilities that maximize flexibility and future expansion opportunities.

Let Romark Logistics become your partner in helping you secure the most efficient distribution operations to accommodate your supply chain needs.

ROMARK Logistics

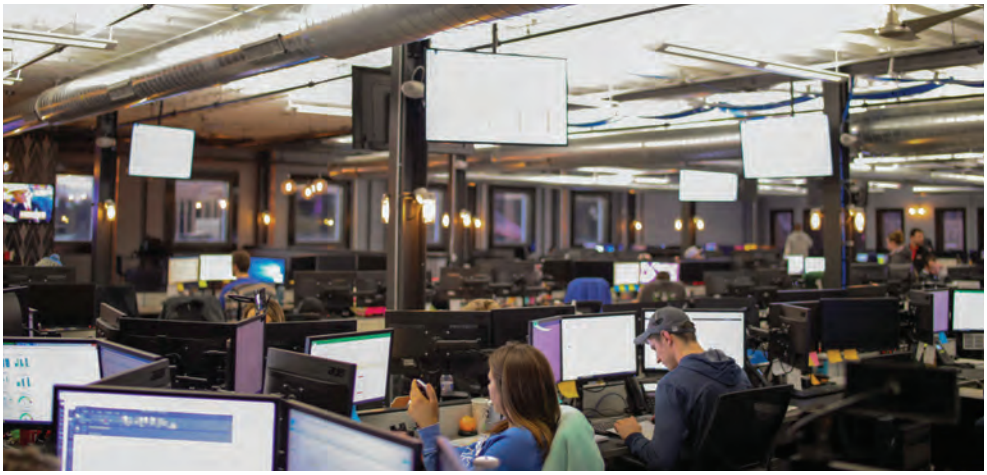
RPM

Barry Spilman
Founder and CEO

RPM was founded in 2012 by Chief Operating Officer, Barry Spilman. RPM fosters a culture of entrepreneurial innovation that has culminated in a revolutionary approach to logistics. Barry oversees RPM's overall business direction, growth, scaling strategies and implementation.

Company Mission:
RPM is passionate about changing the lives of our customers, team, and communities. We are deeply committed and engaged in what happens beyond our walls. We want to impact our customers and carriers in a meaningful way, ultimately improving lives and creating wealth, so that our trading partners can in turn give back to what matters most to them.

RPM
301 W. Fourth, Ste 200
Royal Oak, MI 48067
855-585-1910
www.LoadRPM.com



RPM is a third-party logistics company specializing in transportation brokerage and supply chain solutions. We continue to scale our operation around the needs of companies across all industries spanning North America. At the core of RPM is our capacity to manage all transportation needs across any supply chain. Our advanced proprietary technology, customer-facing teams and carrier-facing teams allow us to provide best-in-class service in all verticals.

We specialize in supply chain management – with unique specializations across the spectrum of freight, vehicle and bulk commodities. We have a system that provides transparency, authentic customer support, and customer and carrier visibility in the face of rapid change – a true value-added logistics and business solution.

Freight Systems

RPM was founded on full truckload and LTL freight – and continues to be a focal point of our operational execution. We service areas, including automotive, retail, metals, building materials, consumer produce, food and beverage, energy and gas, chemicals and more. We remain committed to sourcing spot and dedicated capacity for our customers through our extensive carrier network and powerful industry relationships.

Vehicle Systems

We move 60,000+ vehicles a month. Whether you need a full truckload, partial or single unit transport, we have your vehicle transport needs covered. We service all areas including OEM, remarketing financial institutions, dealerships, fleet management, rental, e-commerce, auctions, cross-border, POV, repo and more.

Bulk Systems

We take great pride in our ability to service unique markets like liquid and dry bulk, including commodities like oil and gas, chemicals, paints and solvents, plastics and resin, food and beverage, agriculture, mining and construction. We thoroughly vet and monitor every one of our providers to ensure complete adherence to all regulatory standards and deliver tremendous value to our bulk transport customers' supply chain routes across the U.S.

RPM is one of the fastest growing companies in America. In 2018, we were honored to be in the top 25% of Inc. Magazine's Inc. 5000 list. We have also been given the rare 5-year-in-a-row distinction by Inc. Magazine on their yearly Inc. 500 list. We have been awarded the honor of Entrepreneur Magazine's Top Company Cultures in 2018, Inc. Magazine's Best Workplaces in 2017, "Cool Places to Work in Michigan" by Crain's Detroit Business in 2015, 2016 and 2017, and received Entrepreneur Magazine's 360 award in 2018 and in 2016.

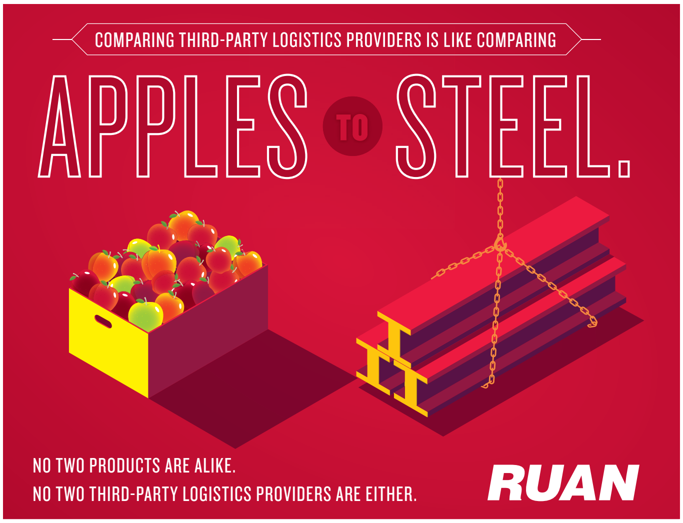
Ruan

Ben McLean
CEO

Mission Statement:
Employ the best team in the industry to move our customers' business safely, efficiently, and on time, every time.

Facts About Ruan
- Founded in 1932
- 300 operations nationwide
- 5,600 team members
- GAAP revenue of $850 million
- Freight under management $1 billion
- Safety and regulatory experts monitor issues and compliance constantly

Ruan is a family-owned company with 86 years of supply chain experience operating according to our original principles of integrity, innovation, and exceptional customer service.



Flexible Integrated Solutions

Ruan's Integrated Solutions combine the flexibility of non-asset and asset-based capabilities with optimal technology and superior service focused on continuous improvement, cost savings, and supply chain efficiency. We partner with you to evaluate, optimize, and deliver a one-source supply chain solution. Ruan's Integrated Solutions are driven by people, transformed by process, and enhanced by platform, allowing you to focus on your core competencies.

Driven by People

Ruan's experienced team members are experts in all aspects of supply chain design and operations. We offer seamless start up and TMS/WMS implementation. Our professional drivers know your business and your customers. We offer one point of contact and one consolidated bill for all services, and our safety professionals monitor compliance and regulations daily.

Transformed by Process

Ruan's business intelligence team provides ongoing analysis that identifies opportunities for continuous improvement and cost savings through development and execution of key performance indicators, quarterly business reviews, and an annual customer satisfaction survey. Ruan's carrier development process includes stringent qualification standards and safety monitoring.

Enhanced by Platform

Ruan's best-of-breed supply chain platform, RTMS2.0, offers sophisticated transportation planning that provides network optimization by employing efficient routing, 3D load configuration, continuous moves, waterfall tendering, dock scheduling, and rich analytics on secure customer portals. Combined with real-time tracking, we help ensure that your product ships on time and safely, every time.

Ruan has expertise in providing supply chain solutions to every industry. And everyone at Ruan is dedicated to serving your business as an extension of your team.

Services

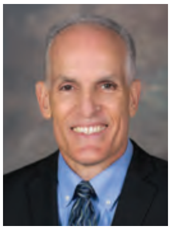
Dedicated Contract Transportation
Supply Chain Solutions
Value-Added Warehousing

Ruan Transportation Management Systems
666 Grand Avenue
Suite 3200
Des Moines, IA 50309
866-782-6669 x7
solutions@ruan.com
www.ruan.com

Blog

RUAN

Saddle Creek Logistics Services



Mark Cabrera
COO

Leverage our wide array of logistics capabilities for omnichannel supply chain solutions that provide speed, service, and scalability.

At Saddle Creek, we specialize in helping retailers, manufacturers and ecommerce companies get products where they need to be quickly, cost-effectively and seamlessly.

Sophisticated Solutions

As an asset-based 3PL, we focus on designing and delivering omnichannel logistics solutions for our clients. Our approach is solution based and data driven, using the most advanced operational methods and sophisticated technologies.

Full Range of Services

Clients utilize our omnichannel fulfillment, warehousing and transportation services as stand-alone offerings or as part of an integrated logistics solution. They can also take advantage of a host of value-added services such as packaging, kitting, display building, embroidery and engraving.

Through our custom fulfillment solutions, they're able to accommodate customer requirements in a variety of channels - including ecommerce, direct selling and subscription/continuity programs.

Extensive Resources

Clients also have access to our nationwide network of strategic locations – 45 shared-space and dedicated facilities across the country – totaling more than 19 million square feet of warehouse space. They enjoy cost-effective, service-driven transportation capabilities including a large private fleet, a full set of brokerage services and extensive relationships with all major parcel providers.

Service Excellence

Saddle Creek is one of the largest family-owned logistics providers in the country. We have been in business for over 50 years and are recognized in our industry as an extremely high-level service provider.

Clients will tell you that we stand out due to our ability to deliver on our promises. This is driven by our company culture, which is one of integrity, strong performance expectations, a high level of accountability and the commitment to doing what is right for our clients and their customers each and every day.

We'll do ***Whatever It Takes!*** to ensure that your supply chain delivers.

Saddle Creek
LOGISTICS SERVICES

Saddle Creek Logistics Services
3010 Saddle Creek Road
Lakeland, FL 33801
888-878-1177
sales@sclogistics.com
sclogistics.com

Seaboard Marine

Edward Gonzalez
CEO

Mission Statement
To be the leader in ocean transportation and logistics to all the markets we serve. Our existence, progress, and success depend on our customers. By creating a positive environment where our employees can work in partnership with our customers, large and small, we shall provide the highest quality service without exception.

Established in 1983, Seaboard Marine is a wholly owned subsidiary of Seaboard Corporation. We are an ocean transportation and logistics company that provides direct, regular service between the United States and the Caribbean Basin, Central, and South America. Seaboard Marine plays a significant role in promoting trade in the Western Hemisphere.

Our success in the region for over three decades has enabled us to expand gradually into new markets. We now serve over 40 ports in over 25 countries. Seaboard Marine's facilities include a private terminal of nearly 90 acres at PortMiami. We carry more cargo to and from PortMiami than any other carrier. This facility complies with and exceeds all governmental security mandates; it operates seven days a week, 365 days a year, a unique convenience for our customers.

Additionally, Seaboard Marine provides services from other U.S. Gulf and Atlantic ports. Operating from our 62 acre terminal in Houston, we offer weekly services to multiple ports in the Caribbean and Latin America. We also proudly serve Central America weekly from New Orleans. Seaboard Marine also provides weekly service throughout the Western Hemisphere between the Northeast United States (Philadelphia, PA and Brooklyn, NY).

Seaboard Marine's fleet of nearly 30 vessels and over sixty thousand (60,000) dry, reefer, and specialized containers supports direct service between the U.S. and major ports of call throughout Latin America and the Caribbean. Our reliable fixed-day schedules make it simple for customers to coordinate manufacturing schedules and maintain inventories at cost-efficient levels. Convenient schedules, outstanding customer service, and an expanding fleet of ships both commanded and managed by a company of dedicated professionals, have become the trademark of Seaboard Marine.

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customerservice@seaboardmarine.com
seaboardmarine.com

SEABOARD MARINE

SEKO Logistics

James Gagne
President and CEO

- Omni-Channel Logistics
- Air Freight Forwarding
- Ocean NVOCC Services
- Ground Transportation
- Home Delivery
- Heavyweight/Final Mile
- White Glove
- Cross-Border eCommerce
- Expedited Cargo
- AOG/NFO Services
- Aerospace Logistics
- MedTec Logistics
- Store Development Logistics
- Warehousing & Distribution
- Customs Brokerage
- Value-Added Solutions
- Supply Chain Software
- TMS
- WMS
- Purchase Order Management
- Asset Management
- Inventory Management
- Demand Chain Management
- 60 USA Locations
- 120 Global Locations

We provide a suite of logistics services which enable you to use your supply chain as a competitive differentiator. As a client centric organization, we are powered by the expertise of our people and our in-house developed, best in class, configurable technology. It is this combination which gives SEKO its strength.

With over 120 offices in 40 countries worldwide, our unique ownership management model enables you to benefit from Global implementation experience and expertise across all industry sectors, coupled with vital in-country knowledge and unparalleled service at the local level.

We have a flat management structure, with just three layers between you and the CEO, making us 'fast on our feet' in delivering solutions that can meet your exact requirements. This lean and nimble structure increases our decision-making speed and gives us an ability to implement scalable solutions which far exceed those of our competitors. This unique business model provides our clients with:

- Fast, efficient decision-making
- Minimal bureaucracy - easy to do business with
- Local expertise through people that really care
- Responsiveness and reliability
- Flexibility and consistency
- Hands-on service and support
- Personal relationships
- Creative, configurable solutions
- Individual vertical sector experience

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hello@sekologistics.com
www.sekologistics.com

International
+1 630-919-4800

Sheer

Joe Egertson
CEO

Our Truth
Our truth is built on transparency. Because having complete information allows clients to make better decisions. It saves time. It's better for business, better for people, and ultimately better for the long-term relationships we cultivate. Our truth leads to extraordinary results. Information is power and we give it to our clients, because that's what they deserve. We're playing a long game, practicing honesty and mutual respect to help our clients thrive. Our truth is that both Sheer and our clients can win. We don't believe in zero-sum strategies; we protect our clients' business interests like our own. Because if they don't win, we don't either. And we don't like losing. This is our truth.

What makes transportation management different at Sheer?

We're more proactive. Using real-time data and business intelligence, we'll analyze and boost virtually every aspect of your logistics network before challenges come up.

SheerExchange

A truly end-to-end supply chain solution.

Measure anything and everything. Transportation costs. Internal efficiencies. Supplier performance. Industry trends. Our SheerExchange platform can provide a wealth of knowledge – and a wealth of opportunities.

SheerExchange captures data throughout the order lifecycle, pulling from our Transportation Management System, your Enterprise Resource Planning System, and data from carriers, vendors, warehouses, and customs agencies.

SheerExchange consolidates data into a clear, visual representation of your end-to-end supply chain operations; providing real-time reporting so the right people can make informed decisions.

We make sense of all of it on a single dashboard that provides a clear, comprehensive view of your logistics operations. Run custom analytics reports, act on insights, and build new capabilities for your business.

We're not a carrier.

That means zero conflict of interest. We'll be your advocate in competitive bidding, ensuring you get reliable carrier capacity at the right price.

We do our homework.

We'll assess your current technology and process flows so we can recommend improvements that save time and money.

Sheer
866.200.5884
sales@sheerlogistics.com
sheerlogistics.com

sheer™
Think Logistically™

The Shippers Group

Rob Doyle
President

Mission
Our mission is to provide the ultimate supply chain experience by **Understanding, Delivering and Improving** services that meet our customers' needs.

Since 1901, we've been in forward motion toward being an industry leader in third party logistics with a focus on our people, our processes and the technology we employ to enhance the overall customer experience.

With 11 locations and 4.5 million square feet of distribution space in 5 states from coast to coast, The Shippers Group is becoming nationally recognized for the full range of logistics services we offer that include Public and Contract Warehousing, Pick-n-Pack and E-Commerce Order Fulfillment, and Transportation Services.

We are BRC Superior with an AA rating and AIB Superior with 990 out of 1000. The Shippers Group is a Green Citizen named by *Inbound Logistics* as a leading company that goes above and beyond to ensure global supply chains are sustainable and operations are socially and environmentally friendly.

World Class Supply Chain Support

Supply Chain performance drives our customers' bottom line and that's why The Shippers Group provides world class supply chain support from receiving inbound products to shipping outbound orders, inventory management and contract packaging. We are focused on Continuous Improvement to keep pace with consistent shifts in consumer demand. We are applying LEAN initiatives for improved productivity and accuracy. TSG is among *Inbound Logistics'* Top 100 3PL Providers for 2018.

The Shippers Group is implementing innovative solutions to effectively manage complex supply chains while reducing costs. Our systems provide agile support to meet the unique needs of our multi-customer distribution operations. From pick-to-voice, layer pickers, robust WMS and LMS systems, we're employing and developing innovative methods within our operations, improving accuracy and efficiency.

The Shippers Group
8901 Forney Road
Dallas, TX 75227
214-381-5050
theshippersgroup.com
info@
shipperswarehouse.com

Blog

THE SHIPPERS GROUP

SMC^3

Andrew Slusher
President and CEO

Mission Statement
SMC^3 is devoted to consistently raising the level of knowledge, collaboration and technological capability in the freight transportation marketplace. The company achieves this using the internal expertise of its employees with industry connectivity to provide the best data, technology and educational services to its members, customers and associates. SMC^3's deep-seated core values of integrity, consistency, thought leadership and operational excellence support this mission and provide a foundation for a unique portfolio of industry solutions.

SMC^3
500 Westpark Drive
Peachtree City, GA 30269
800-845-8090
sales@smc3.com
www.smc3.com

SMC^3 is the one-stop knowledge hub for LTL technology, data and education. As the single integration point for all carrier rate, transit and service information, SMC^3 solutions travel beyond simple connectivity and empower shippers, 3PLs and carriers to collaborate and optimize decision making.

LTL Technology and Data

The SMC^3 Platform is the underlying LTL fuel for transportation management systems. It delivers the only integrated suite of technology solutions that enables shippers, 3PLs and carriers to collaborate and optimize decision making throughout the entire LTL shipment lifecycle. Built on a secure cloud network and supported by redundant security protocols, SMC^3 solutions simplify the complexity of LTL:

- Price negotiations and bid management
- Rating and transit-time optimization
- Shipment tracking from dispatch to delivery
- Freight bill auditing

SMC^3 is best known for CzarLite, the industry standard base rate; the BidSense bidding tool; and the high-horsepower analytical APIs RateWare XL and CarrierConnect XL, which deliver high-speed rating analytics, and carrier points of service and transit times, respectively. Supply chain players rely on SMC^3 to deliver detailed and actionable intelligence, translating complex supply chain information into optimized data.

The industry's only complete and flexible LTL solution, the SMC^3 Platform, allows customers to choose the level of computing power to match their business needs, and is the only solution shippers and 3PLs of any size need to successfully navigate the LTL shipment arena.

The newest additions to the SMC^3 Platform, LTL Execution and Visibility APIs, provide real-time shipment communications via connectivity direct to carriers.

Delivered with industry-leading speed, reliability and performance, LTL solutions from SMC^3 offer unparalleled insight, giving customers an unrivaled ability to make smarter LTL freight decisions.

Education

SMC^3 extends its expertise through supply chain educational forums across North America. Attendees keep current on industry trends and best practices used by global supply chain leaders at Connections and Jump Start, SMC^3's two annual supply chain conferences.

The strategic educational and networking events feature cutting-edge, forward-thinking sessions, top-tier presenters and unique networking opportunities. SMC^3 works to create events that facilitate lasting collaboration between logistics and transportation professionals from carrier, shipper, 3PL and technology-provider verticals.

SMC^3's technology, data and educational solutions are backed by a lifetime of industry understanding and technical expertise.

Contact SMC^3 today to learn more.

Sunland Logistics Solutions

Arch Thomason
CEO

Purpose:
Sunland's purpose is to help our customers do what they do...better!

Founded in 1982, Sunland Logistics Solutions is a growing 3PL headquartered in the Southeast of the US and expanding nationally. With extensive global supply chain experience, Sunland's current leadership team united in 2013 with a servant leader mentality to help their associates and customers be successful. Sunland is focused on being a flexible partner who provides world class service through high performance, advanced technology, and a winning continuous improvement culture.

Key Markets:
Retail / e-commerce
Automotive
Chemical
Industrial

Sunland Logistics Solutions, Inc.
Corporate Office
1312 Old Stage Road
Simpsonville, SC 29681
864.295.0081
Solutions@SunlandLS.Com
SunlandLogisticsSolutions.com

Sunland specializes in providing warehousing and value added services with expertise in multiple industries including: automotive, retail / e-commerce, chemical, and industrial. As the team continues to attract leading talent in the industry and grow alongside its customers' evolving needs, Sunland is continuously expanding its footprint and scope of services.

Process Leadership

- Project management
- ISO 9001 certified operations
- Quality & lean focus
- Relationship management

Advanced Systems & Innovation

- Tier 1 WMS , TMS, LMS
- Enhanced visibility across supply chains and plant networks
- Integration expertise
- Solutions Lab team of IT & engineering experts

Services

- Order fulfillment, inventory management, & returns management
- Labeling, Repackaging, customization, kitting
- Hazmat & flammable storage, Foreign Trade Zone
- Sequencing, export packaging, inspection, material planning, assembly
- In-Plant logistics, JIT Shuttle Transportation

Core Values

Winning Every day: Working with our fellow associates, customers, and suppliers to collaborate and win as a team.

Customer Loyalty: Committing to asking, listening, and responding proactively to customers' changing needs and continuously learning in order to develop solutions for our customers.

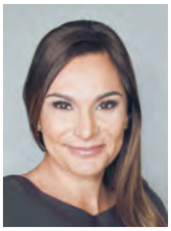
Associate Engagement: Providing leadership that inspires service excellence and ability to generate and share ideas that will help change the game for customers.

Reaching New Heights: Striving to seek new methods to innovate, provide fuel for organic growth, and win new customers.

Encouraging Excellence: Adopting an attitude of excellence in all aspects of our business and approach to serving customers, which translates to a culture of encouraging winning strategies and creating a "leading effect."

SUNLAND
LOGISTICS SOLUTIONS

Sunset Transportation



Lindsey Graves
Chief Operating Officer

Customized Solutions
- Logistics program implementation & management
- Shipper technologies
- Freight audit & payment services
- Domestic & international transportation brokerage

Service Promises
- Savings
- Visibility
- Data-driven decisions
- Continuous improvement
- Relationships, not transactions

Sunset Transportation
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www.SunsetTrans.com
Phone: 314-325-1505
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Between our diverse 3PL services, user-friendly shipper technology tools, and customer-focused culture, Sunset is a top 10 3PL partner. Sunset's flexibility and entrepreneurial spirit make us the right size provider for your growing business. We support a range of freight programs while remaining agile and committed to personal service.

Time to Truly Manage Your Supply Chain?

Sunset customers can get back to mission-critical business knowing their supply chain is being analyzed, monitored and improved month over month. We are accountable for providing ongoing savings and efficiencies through:

- Bid management and carrier procurement
- Route optimization and strategic modeling
- Integration and visibility
- Freight bill audit and payment
- Key Performance Indicator (KPI) compliance and reporting

Need a TMS That Fits Your Business?

Do you have visibility to every shipment within your system? Can you access multiple carriers' pricing across modes within your system? Do you know if you're utilizing the lowest-cost carrier and right mode for every shipment? If the answer is no, you're not alone.

Even the most complex supply chains operate with significant gaps in visibility due to inefficient technology or unknown solutions. Sunset works to bridge common gaps in your ERP with a logistics management solution that gives you access to Sunset's TMS, providing:

- Shipment rating and routing
- Shipment execution and tracking
- Carrier safety and compliance
- Shipment image retrieval
- Supply chain analytics

Why Sunset?

As a growing second-generation corporation, Sunset puts our customers first – big or small. Sunset and its employees are dedicated to continuous improvement and personalized attention.

We are proud to uphold and report on our five (5) promises with every customer, every day:

- Savings
- Visibility through technology
- Data-driven decisions
- Continuous improvement
- Relationships, not transactions

Let Sunset help you navigate the challenges of strategic supply chain management. We are here for the long term, and are helping our customers grow through our experience, integrity, and service!

INBOUND LOGISTICS TOP 10 3PL PROVIDER 2018

SUNSET TRANSPORTATION

SwanLeap

Brad Hollister
CEO

FASTEST GROWING FOR A REASON

Mission Statement: SwanLeap seeks to disrupt legacy supply chain strategies and realign processes with our transportation knowledge and technology expertise to enforce best practices and improve customer experiences.

PRODUCTS & SERVICES

- TMS
- Freight Pay and Audit
- Analytics
- Smart Contracts
- Consulting

Inc. 5000 #1 2018

500 Technology Fast 500 2018 NORTH AMERICA Deloitte. #1

SwanLeap
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swanleap.com

SwanLeap—the No. 1 fastest-growing company on the 2018 Inc. 5000 and Deloitte Technology Fast 500—provides supply chain managers, decision-makers and entire companies with comprehensive, actionable insights into supply chain logistics and costs by generating impactful savings through an artificial intelligence-based recommendation engine, automation, data analysis, consulting and a next-generation transportation management system. Headquartered in Madison, Wisconsin, SwanLeap brings unprecedented clarity and control to a fragmented shipping market through a proprietary machine learning platform that curates cost-effective and personalized supply chain recommendations in real time across all transportation modes to improve connections between sender, receiver and carrier.

Until now, logistics managers, finance executives and other supply chain decision-makers have operated in information silos, forcing decisions based on a fraction of the facts influencing service, cost and customer experience. Driven by artificial intelligence and machine learning, SwanLeap specializes in supply chain best practices and shipping cost-reduction strategies, saving clients an average of 26.7 percent annually. By providing unprecedented visibility into a fragmented shipping market, organizations are able to make more informed decisions in real-time. Through a next generation TMS built on a true cloud architecture, freight pay and audit services and consulting services, SwanLeap is helping forward thinking companies leap into the future.

SwanLeap simplifies supply chain management with an artificial intelligence platform that saves money, optimizes visibility and increases control.

SWANLEAP

Syfan Logistics

Steve Syfan
Executive Vice President

Who We Are

Syfan Transport is a Southeast-based carrier fleet featuring 24-7 dispatch, on-board GPS and ELD-compliant systems on every truck, and transparent reporting on all shipments. Together with its 3PL arm, Syfan Logistics, the company provides a diverse array of shipping needs throughout the continental United States, Mexico and Canada.

Mission Statement:

We will provide our customers a competitive advantage through superior transportation and logistics services. We will consistently strive to meet and exceed our customers' expectations of service through timely communication and quality information.

Vision Statement:

We seek to be a guiding light of ethics, integrity and Christian faith in our service to the transportation industry.

Syfan Logistics
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Steve Syfan,
Executive Vice President
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SyfanCorp.com
Toll-Free: 855.287.8485
Local: 770.287.8485

Shipping & Logistics

Without the Drama

Syfan Logistics and asset-based Syfan Transport have always focused on delivering the highest level of transparency and reliability for customer shipments – with no surprises and zero drama. This year provides another opportunity to deliver on their commitment.

Syfan is growing to meet customer needs. The company has expanded its offices on two floors by more than 18,000 square feet to bring all departments under one roof and accommodate projected growth over the next three years.

The addition, which was completed in 2019, provides more room for the accounting, human resources and training departments to join the sales and logistics staff at the company's headquarters north of Atlanta in Gainesville, Ga.

Syfan Logistics currently employs approximately 250 professionals, and the extra space will allow for another 100 or more new team members, according to CEO Jim Syfan.

Growing fleet

Meanwhile, Syfan Transport continues to grow its over-the-road fleet with a new contingent of Peterbilt trucks for 2019 – addressing customer demands for even greater accessibility to equipment across the country. Syfan Transport's carrier fleet is supported by several hundred trailers – dry vans, flatbeds and the industry's most advanced temperature-controlled reefers with cold-chain monitoring and solar panels.

On the logistics side, Syfan further draws from an expansive network of carrier partners to bolster its service and fill gaps. Syfan Logistics has grown into one of the leading logistics services in the United States. Inbound Logistics, Transport Topics and other publications have recognized the company in their rankings of the nation's top logistics providers.

Primary insurance

Syfan Transport and Syfan Logistics serve the most demanding shipping needs with on-time pickup and delivery throughout the continental United States, Mexico and Canada. And Syfan goes the extra mile by backing every load with primary cargo insurance. It's a commitment practiced by only a small percentage of the industry.

Syfan Services

Transport

Numerous Syfan Transport fleet trucks and equipment options are available around the clock. And all support is handled by the company's own 24-7 dispatch team (not an outside answering service).

Expedited

Syfan's long history with JIT shipping for automotive manufacturers and small parcel air loads has forged a unique sensitivity to deadline-oriented shipping.

Third-Party Logistics

For shippers faced with a sudden spike in shipping volume or the occasional spot load, Syfan Logistics fills those emergency gaps.

Freight Management Services

Syfan Logistics also can manage a company's entire shipping program, providing significant cost savings.

Intermodal Service Recovery

Syfan is a UIIA carrier for all modes of transit (single drivers, team and expedited) and provides service recovery, crosstown shipments and power-only shipments.

Project Management

Whether relocating a frozen food shipment from a damaged warehouse or moving large equipment, no job is too big or too small.

Customer Industries:

- Food and Beverage
- Parcel shipping
- Automotive
- Manufacturing
- Healthcare
- Construction materials
- Retail/Consumer products
- Electronics
- Paper products

SYFAN LOGISTICS
An American Tradition in Transportation
IN GOD WE TRUST

Taylored Services

Jim DeVeau
President and CEO

Mission Statement:
We have become a leader in fulfillment by thinking like our clients, providing the services they need when and where they need them. We strive to be the top provider of distribution and fulfillment services to the retail apparel, footwear and accessory markets.

Taylored Services
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Chris Kearns
VP of Key Accounts
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Taylored Fulfillment Services. Since our humble beginnings in New Jersey in 1992, Taylored Services has grown to become a national leader in distribution, fulfillment and warehousing. We have achieved this status by providing the services our clients need when and where they need them.

Our distribution centers are located near the nation's busiest ports of Los Angeles, Long Beach and New York. We work with a diversified client base including wholesalers, manufacturers and retailers and our expertise extends to multiple brand and accessory categories.

We have invested significantly in systems and technology and maintain long-term relationships with all of the other interim suppliers along our clients' boxes journey. As a result, our clients can track their merchandise at every step through and from our warehouse to multiple points of destination.

Our services include:

- Warehousing and Distribution
- Supply Chain Management
- Value Added Services and Merchandise Rework
- Transportation Management Services

Warehousing & Distribution

Taylored Services operates strategically located warehousing facilities in major locations on both coasts of the US. While our clients' products are stored with us, they are safe, secure and well-tracked. If products require a dedicated facility, or need to share space in one of our distribution centers, we have the resources and experience to meet our clients' warehousing and distribution needs, including:

- Pick & Pack
- E-Commerce
- Receiving – All receipts processed against service orders – EDI or flat file transmissions
- Inventory Control – Radio frequency bar-code scanning and cycle counts
- 24/7 real time inventory visibility & reports through Taylored Access
- Fulfillment – Designed to meet client-specific needs (FIFO, LIFO, serial or lot #)
- Electronic Notification (EDI, flat file or Taylored Access)

Supply Chain Management

We work closely with our clients and all of their and our channel partners to ensure that we are implementing the most effective and efficient supply chain solutions, particularly with regard to warehousing, distribution and packaging.

Value Added Distribution Solutions

From product inspection to ticketing, we offer a wide range of services to meet our clients' needs inside the box. Among the multiple value added services Taylored provides are:

- Re-packing, re-ticketing & assortments
- Point-of-purchase display assembly
- Inserts and labeling
- Returns – client-defined processing, inspection, quality control and tracking

Transportation Management Services

Our expertise, experience and relationships extend to flexible and cost effective transportation solutions. We help our clients reliably move their products into and out of our warehouses.

Our shared commitment to your objectives makes us a dedicated provider focused on the very same goals that drive your business. Contact us today at (844) RING TDF, and let us put our experience to work for you.

TAYLORED FULFILLMENT SERVICES

TOTE Maritime Puerto Rico

Mike Noone
President

Mission Statement
A leader in the shipping industry with a professional team that is dedicated to unparalleled customer service, safety and environmental responsibility.

TOTE Maritime is a pioneer not only in shipping cargo, but also in connecting businesses and communities. For more than 30 years, we've transported a wide variety of cargo between Jacksonville and Puerto Rico twice weekly. Throughout that time, we've adapted, expanded and innovated. Yet at each stage of our evolution, we have remained as dedicated to caring for our employees and our community as we are to exceeding clients' expectations.

This dedication is central to our core values of safety, commitment and integrity. It's also what makes us a leader in the shipping industry. Here's what you can expect from TOTE Maritime:

INNOVATIVE TECHNOLOGY

As an industry leader, TOTE Maritime brings you the benefits of emerging technology. We were the pioneers of Marlin Class LNG-powered container vessels and continue to invest in innovations to better serve our customers. Our CoolConnect service uses smart refrigerated containers and 24/7 real-time monitoring to ensure perishables and pharmaceuticals maintain the correct temperature and arrive with maximum precision.

UNIQUE EQUIPMENT

TOTE Maritime offers an advanced, flexible and comprehensive array of equipment to meet our customers' particular needs, including the world's first 53-foot tri-modal containers. We've also designed and patented innovative auto carrier racks to ensure shipped vehicles arrive in pristine condition. All our equipment is supported with the most versatile lift-on/lift-off Marlin Class vessels in the trade as well as a network of port facilities and quality inland transportation resources.

TURNKEY SOLUTIONS

TOTE Maritime backs our technology and equipment with unparalleled customer service. We have launched the second generation of our online booking web portal to better meet our customers' needs. The portal allows you to create, change and monitor your shipments with the click of a button. Our representatives are also readily available via phone or email and pride themselves on rapid response. We even rolled out our app last year so that you can have information on the go — no matter where you are.

Experience the TOTE Maritime difference by contacting us today.

TOTE Maritime

TOTE Maritime Puerto Rico
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877-775-7447
www.totemaritime.com

TransGroup Global Logistics

- U.S. Owned Globally Connected
- Transport & Logistics Nationwide/Worldwide
- Global Warehousing & Distribution
- Integrated Supply Chain Management
- Industry-Leading Technology
- Customer Centric Approach
- Custom Tailored Systems & Solutions
- Heavy Project Logistics

Inbound Logistics Top 100 3PL Provider 2018

An Inbound Logistics Green Supply Chain Partner 2018

SmartWay Transport Partner — Getting There With Cleaner Air

Our logistics expertise is a balanced cross-discipline of domestic, international and warehouse/distribution services, making TransGroup a true single-source transportation and logistics provider. Our 'Customer Centric' approach, global reach and industry-leading software enable us to do just that. We partner with our clients to tailor and integrate logistics systems and solutions that deliver value across the entire enterprise.

We create logistics solutions that matter.

International Services

- Global Air
- Worldwide Consolidation
- FCL / LCL
- Air & Ocean Charter
- Complete Project Cargo Services
- Dangerous Goods
- Customs Brokerage
- C-TPAT Validated
- Overseas Warehousing & Distribution
- FMC OTI / NVOCC Licensed

North American Services

- Next Flight Out
- Next Day AM / PM
- Second Day
- TranSaver 3-5 Day
- Express LTL / FTL
- Hot Shot Options
- Specialized Equipment
- Air Charter
- Trade Show Services
- Asset Recovery / Reverse Logistics
- White Glove Services
- Warehousing & Distribution
- TransBorder Expertise (Canada/USA/ Mexico)

Technology

- Global Tracking
- Online Shipment Initiation
- Worldwide P.O. Management
- Proactive Milestone & Status Notifications
- Reports / Metrics
- Global Warehouse Management
- TMS Online LTL Rating & Dispatch
- EDI / XML / ERP Integration
- Internally Developed for Maximum Flexibility

Get our Mobile App by visiting: http://app.transgroup.com

TRANSGROUP® GLOBAL LOGISTICS

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www.transgroup.com

Transplace

Frank McGuigan
CEO

Mission Statement
Achieve supply chain excellence for our customers – North American manufacturers, retailers, and distributors – as the premier provider of managed transportation, consulting & TMS solutions; and intermodal, truck brokerage, and cross-border trade services.

Exceed customer expectations through superior quality and value. Our assets are people, proven processes, proprietary technology and scale.

Transplace Offices
United States:
Corporate HQ: Frisco, TX Chicago, IL, Cincinnati, OH, Edison, NJ, Garland, TX, Greensboro, NC, Greenville, SC, Iselin, NJ, Jacksonville, FL, Laredo, TX, Little Rock, AR, Lowell, AR, Los Angeles, CA, Memphis, TN, Philadelphia, PA, Pittsburgh, PA, St. Louis, MO, Stuttgart, AR
Canada:
Toronto, ON, Oakville, ON
Mexico:
Apodaca, TS, Mexico City, DF, Monterrey, FN; Nuevo Laredo, TM, Querétaro, QT

Contact info
info@transplace.com
transplace.com

888.445.9425

North America's Premier Provider of Logistics Solutions

Transplace is a non-asset based logistics services provider offering manufacturers, retailers, chemical and consumer packaged goods companies the optimal blend of logistics technology and transportation management services. We are recognized among the elite 3PLs for our proven ability to deliver both rapid return on investment and consistent value to a customer base ranging from mid-market shippers to Fortune 500 companies.

With operations centers located throughout North America, Transplace delivers integrated solutions tailored to meet in-country and cross-border supply chain needs.

Transportation Management

Transplace offers flexible and customizable managed transportation services that optimize our customers' supply chain and help them outperform their competition. Shippers of all sizes choose Transplace for the convenience of having a single transportation partner that can support the unique and changing needs of their business and alleviate the administrative burdens of transportation management. Whether you are looking for a completely outsourced solution, Software as a Service (SaaS) technology, or something in between– Transplace can provide a customized business solution to fit your needs.

- Managed Transportation Solution/ Control Tower
- Proprietary SaaS TMS
- Supply Chain Engineering & Consulting

Strategic Capacity Solutions

Our comprehensive capacity expertise allows us to leverage our entire network to solve large-scale, complex supply chain problems for every one of our customers. Whether domestically, cross-border, collaboratively or via intermodal transportation, we can create capacity solutions that deliver meaningful benefits to shippers throughout all of North America. Our experts can tap into our vast network in order to craft a solution tailored to each individual business, fusing together the best of our managed services and capacity solutions. Our goal is to push even further beyond a traditional brokerage solution to deliver a better transportation network to our customers.

- TL, LTL, Intermodal
- TransMATCH Co-loading
- Continuous Moves/Cross-Border Cross-Client Collaboration

Cross-Border and Global Trade Solutions

Rely on Transplace to help you navigate through the ever-changing regulatory environment of cross-border and global transportation. Our compliance experts design strategic processes to help your business mitigate risk, reduce supply-chain costs and get the visibility you need for your logistics operations.

- Customs Brokerage & Trade Compliance
- Cross-docking/Transloading
- Global Trade Management

TRANSPLACE
REST EASY. WE WON'T.

Transporeon

Ed Moran
Managing Director and SVP Sales & Marketing

Mission Statement:
Transporeon Group enables carriers, shippers, and their customers to thrive as part of the world's largest collaborative network of supply chain professionals. With solutions that allow our customers to make the most of a digitalized transportation network, we help companies around the world maximize competitive advantage.

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Suite 400
Fort Washington, PA 19034
contact-us@transporeon.com
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The Transporeon group powers three cloud-based logistics platforms that enable a worldwide, collaborative network of logistics professionals: Transporeon for transportation management, Ticontract for transportation procurement and Mercareon for retail-specific dock scheduling.

These platforms for intelligent transport logistics create a digital connection between shippers and carriers, achieving smarter, transparent and more cost-effective movement of goods around the world. By digitizing the entire logistics supply chain, it also enables real communication and collaboration across the worldwide shipper-carrier community.

The company links a global network of more than 1,000 shippers (manufacturers, suppliers, and retailers), 65,000 carriers (logistics and transportation service providers, 3PLs, freight forwarders, and brokers), and more than 100,000 users in over 100 countries through a range of software-as-a-service solutions currently available in 24 language versions.

Driving Efficiencies in Logistics

The cloud-based transportation and logistics software from Transporeon Group drives efficiencies such as lower costs and higher productivity. With real-time visibility, process automation and our one-web-plug simplicity, we offer a singular shipper connection to a world of carriers. Our solutions include:

- Transportation Sourcing/RFP Management
- Rate Management
- Shipment Execution
- Dock Scheduling
- Visibility
- Reporting
- Freight Bill Audit
- ERP integration

Transportation Sourcing

Ticontract brings speed and structure to your freight procurement processes. This pioneering e-sourcing solution can help you find the right logistics service providers and reduce administrative workload associated with the RFP process for greater market transparency, easily comparable offers and insightful reports at the click of a mouse. Simplify your bid communications with a fully customizable RFI/RFP platform, with integrated features for FTL, LTL, air and ocean.

Automated Shipment Execution

Transporeon is a collaborative logistics solution that offers full connectivity to ERP and a complete range of transportation management functionality to help solve your daily logistics challenges. Cut transportation and administration costs by utilizing spot-market freight assignment for day-by-day capacity and demand matching in real-time to a closed pool of carriers, or fully automated freight assignment, which automatically assigns the freight order to one carrier based on pre-set criteria.

A Customized Fit

Unique in the market, Transporeon Group solutions include onboarding, consultancy, and lifetime support with multilingual customer support. This ensures a customized fit for each organization, boosting shipper/carrier performance and cutting costs while optimizing carrier margins and lowering CO2 emissions. Transporeon services are ISO-27001 certified, and the group has global presence with offices across the US, Europe, Russia and Asia. Transporeon Group Americas is based in Fort Washington, PA.

Transportation Insight

Chris Baltz
President & CEO

Through innovative multi-modal solutions (LTL, Parcel, Full Truckload), technology and advanced analytics, we evolve the digital supply chain for sustainable enterprise excellence.

Enterprise Logistics Services

- Domestic Transportation
- International Transportation
- E-commerce Solutions
- TMS Technology
- Supply Chain Analytics
- Freight Bill Audit and Payment
- Parcel Audit, Optimization, Advanced Analytics
- Warehouse Sourcing
- Extended Lean®
- Insight Fusion® Big Data Solution
- Private Fleet Consulting
- Outsourced Execution
- Transactional Services
- Indirect Materials Sourcing Including Secondary Packaging

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Omaha, NE – Overland Park, KS
Salt Lake City, UT – St. Louis, MO

Blog

Enterprise Logistics

A non-asset-based logistics provider and supply chain consultant, Transportation Insight offers advanced analytics and technology-powered solutions in all transportation modes (LTL, Parcel, TL). Transportation Insight partners with over 1,500 manufacturers, distributors, retailers and e-tailers to deliver data-driven insight for supply chain transformation. We help clients grow, reduce supply chain related costs, increase agility, improve customer delivery experience, mitigate risks, streamline processes and achieve enterprise sustainability.

Continuous Improvement

With our **Extended LEAN®** continuous improvement methodology for the supply chain, we help clients increase operational efficiencies, maximize profits, improve visibility and optimize their extended value chain. Transportation Insight implements integrated analytics to help clients increase efficiency, while reducing vehicle miles, fuel and energy consumption and air pollution emissions. This sustainability mindset earned Transportation Insight a U.S. Environmental Protection Agency 2016 SmartWay® Excellence Award.

Logistics Innovation

Co-managed Logistics®, our consultative approach to logistics management, allows shippers to maintain their desired level of supply chain control. Clients consider us a trusted adviser providing optimal choices in end-to-end supply chain solutions, including domestic transportation sourcing and support, international freight forwarding, import/export compliance, integrated warehousing and other value-added services.

Analytics

We deliver comprehensive present, past and future business insight solutions. Quickly identify optimal shipment routing and service providers, access in-transit tracking and execute shipments. Leverage comprehensive reporting to uncover missed opportunities, spot trends and make data-driven decisions. Look forward with advanced network modeling and simulation tools. Access key performance indicators when, where and how you need them through our mobile interactive portal Insight Fusion®.

Technology

Insight TMS®, our customizable, web-based Transportation Management System, provides total shipment visibility from foreign ports to the customer's door through one interface. Automate logistics tasks like load tendering, shipment tracking, rate shopping, dock scheduling and Bill of Lading creation and integrate with other systems for maximum impact.

Parcel Solutions

Transportation Insight's innovative parcel engineers, advanced analytics experts and product managers possess extensive parcel shipping expertise. Through optimization, advanced analytics and audit (Invoice, Service and Compliance), Transportation Insight helps develop more efficient, economically integrated supply chains for small-package shippers in e-commerce, retail and manufacturing.

Financial Settlement

Proprietary freight invoice audit and payment solutions provide benefits beyond ensuring invoice accuracy. In addition to validating the integrity of the data that drives the actionable business intelligence we deliver for our clients, we help companies improve accounting efficiency through consolidated electronic billing, automated general ledger coding, timely carrier payment and freight accruals. Rigid processes and controls helped Transportation Insight earn a global reputation of trusted business partner.

Transportation Insight
Evaluate. Innovate. Dominate.

TransportGistics

www.blgen.com
www.freighttracing.com
www.insourceaudit.com
www.productreturns.com
www.routingguides.com
www.tgibid.com
www.tgirater.com

TransportGistics puts you in control with global products and services that provide market leading, simple, incremental solutions for transportation management and logistics functions within your supply chain.

Our cloud-based solutions enable you to:

- Reduce costs
- Improve processes
- Identify hidden costs of transportation
- Improve vendor compliance routing guide
- Improve Supplier Relationship Management (SRM)
- Monitor vendor performance
- Improve shipment visibility
- Generate automatic, status-driven alerts
- Monitor carrier performance with respect to time in transit, service failure, and billing
- Enable collaboration
- Source, procure and execute transportation services

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Simpler-is-better transportation management and logistics solutions.

Transportation Management and Logistics Solutions

TransportGistics is a global, multi-product and services company that provides market leading, simple, incremental solutions for transportation and logistics management. Our rich history in micro logistics solutions and macro logistics strategies is the fuel that drives our "simpler is better" model.

Our innovative, incremental strategy to assist and enable our customers to achieve cost-effective independence from legacy practices has been highly successful, resulting in double-digit cost savings, cost avoidance and rapid ROI.

Solutions should not be more complicated than the problems they are trying to solve!

Simpler is better, and that is the approach that we have taken with our cloud-based products and services. These easy-to-implement, easy-to-use solutions allow users to reduce costs and improve operations while managing discrete transportation and logistics management functions. Each solution can be deployed separately or in an integrated environment to meet requirements to improve business processes, reduce costs and enhance service offerings.

- **BLGen:** Create and communicate transportation forms, including packing slips, carton labels, LTL and TL Bills of Lading.
- **FreightTracing:** Provides complete shipment visibility, including alerts.
- **InsourceAudit:** A freight bill management, shipment information, cost-control portal that enables users to manage and control pricing and performance, freight invoices, payment and information.
- **ProductReturns:** Enables users to automatically generate return authorizations, route shipments via least-cost carriers, generate bar-coded Bills of Lading, and facilitates the receiving and accounts payable/receivable processes.
- **RoutingGuides:** Enables streamlined and simplified production, maintenance, distribution, and compliance by eliminating the need to print, distribute and track receipt of new or updated Routing Guides.
- **TGIBid:** TGIBid is a cloud-based shipment auction portal that allows your users to submit your shipments to your carrier partners and then award the carrier with the shipment that meets your criteria (price, transit time, etc).
- **TGIRater:** Cloud-based solution programmed with your negotiated carrier agreements. Community management allows for hierarchical access with easy management and usability. Company data can be pre-populated for ease of entry and improved data quality. Time in transit and least-cost carrier calculations are performed across your entire carrier base.

TransportGistics products address the inefficiencies in transportation management, reduce freight expense, simplify the functions to be executed, make transportation information immediately visible to all parties involved in the transaction process, improve communications, and increase productivity.

If you are interested in simplifying your complex logistics challenges, call us today at **631-567-4100**, or visit us on the web at **www.transportgistics.com**

TGI
TransportGistics

Trax

Total Transportation Spend Management – Freight Audit Transformed.

Top 100 Logistics IT Provider 2018

Pros to Know 2018 SDCExecutive

Trax is a global leader in Transportation Spend Management solutions. Combining industry leading cloud based applications with expert services, we are transforming traditional freight and parcel audit to help customers better manage and control their global transportation costs and drive enterprise wide efficiency. With a global footprint spanning North America, Latin America, Asia and Europe, we deliver data based visibility and insights, higher savings and better control of transportation spend for shippers of all sizes.

Transportation Spend Management

At Trax our Total TSM℠ solution is purpose-built as a closed loop spend management solution for transportation; combining and leveraging a best-in-class set of data management and audit capabilities with a rich set of spend intelligence solutions or Transportation Spend Intelligence (TSI). Total TSM℠ represents the next generation of freight and parcel audit and we intend to drive the industry toward comprehensive transportation spend management to finally deliver the capabilities shippers require to better manage and control their transportation costs.

Transportation Spend Intelligence

Best-in-class analytics can transform transportation cost data into an advantage for any shipper. Analytics can eliminate the pain involved with managing raw transportation data and converting it into actionable intelligence – reducing the time required to take action.

Trax delivers transportation spend intelligence through our TSI solution suite, enabling shippers to analyze their transportation spending and answer key questions like "What happened?" "Why did it happen?" and "What can I do about it?". Whether it's our TSI Insights solution, which captures all spending and KPIs in a best-in-class business intelligence solution or our patent pending TSI Variance Analysis, which quickly lets you measure the changes in your spending and identify the root causes of those changes, TSI gives you control.

Why Trax

Trax delivers solutions that move beyond traditional freight and parcel audit and enable shippers of all sizes to quickly gain the benefit of transportation spend management – enabling you to better manage and control one of your most significant and complex spend categories.

trax

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sales@traxtech.com
traxtech.com

Tucker Company Worldwide

Jeff Tucker
President and CEO

Jim Tucker
President and COO

Tucker Company Worldwide Affiliations
TIA
NITL
TAPA
NDTA
NCBFAA
QualifiedCarriers.com
ISNetworld

Services:

Truckload
Dry Van
Temperature Control

Flatbed & Specialized

Project Management
Product Launches
Managed LTL Programs
Inbound & Outbound
Freight Management

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Blog

We are Tucker Company Worldwide – the most respected name in North American freight transportation. We are passionate about our business, our customers, carriers and our industry.

Difficulty is our Specialty

Oversized, delicate, high value, hazardous… each of these freight types is wildly different, but they have one thing in common: all require the utmost care, and must be handled by competent professionals and carefully designed procedures. We've spent 57 years perfecting our recipe: a combination of ISO 9001:2015 certified industry leading processes, a meticulous approach to carrier selection, and a dedicated staff made up of freight experts and forward thinkers.

Quietly & Confidently Leading the Pack

We're pioneering a new level of transportation service—again. Tucker provides outstanding service in every area of logistics planning, execution and reporting. We serve shippers from small shops, to multinational household names.

Service That Sets us Apart

- Superior Carrier Selection
- 24/7/365 Expert Logistics Support
- Access to unlimited capacity

We are Forward Thinkers

We have a lot of experience moving freight, so naturally we've evolved to offer programs that go beyond executing simple shipments. For instance, we can coordinate a fleet of highly time-sensitive shipments – and deliver them in exactly the order you need them. We can take the lead on your project launch and arrange all major retail deliveries across the country, so that your brand doesn't miss a beat. Tucker Company Worldwide delivers unparalleled service, around the clock.

ISO 9001:2015

SmartWay Transport Partner
Getting There With Cleaner Air

U.S. Bank Global Transportation Payment Solutions

Jeff Pape
Senior Vice President
Head of Product Marketing
Global Transportation

Get the reliability and visibility you need

No matter what role you play in managing a successful supply chain, you count on reliable partners and visibility into critical data to make informed decisions. Depend on the strength and experience of U.S. Bank to provide the payment integrity, efficiency and security only a bank can provide.

U.S. Bank Freight Payment

Get the reliability and visibility you need to make your supply chain a strategic advantage. U.S. Bank Freight Payment is a comprehensive solution designed to streamline freight invoice audit and payment processes at every mile through:

- **100% pre-payment audit** to uncover savings
- **Enhancing working capital** while providing carriers timely, predictable payment
- **Collaborative, web-based tools** to reduce errors and resolve exceptions quickly
- **Freight analytics tools and services** that turn raw data into smart decisions

U.S. Bank Voyager® Fleet Program

Managing fleet expenses and payments can be a major challenge—especially if you don't have the right solutions. The Voyager Fleet Program enhances driver efficiency and reduces costs while supporting data integrity and preventing fraud and misuse. We offer:

- **Convenience:** Pay for fuel and maintenance expenses at more than 320,000 locations worldwide
- **Control:** Support fleet policies, budgeting, forecasting and auditing with streamlined data
- **Cost savings:** Prevent fraud and misuse with automated controls, reporting and real-time alerts
- **Customer service:** Available 24 hours a day, whether you're in the office or on the road

U.S. Bank
Global Transportation
Payment Solutions

Bank on us.
usbpayment.com/transportation-solutions
866.274.5898
intouchwithus@usbank.com

UTXL

Mark Hogan
CEO

Our Mission:

...place safety FIRST.

...pursue perfection.

...achieve excellence.

eXcellence... ...eXpedited

Together, let's expedite excellence.

The best transportation brokers enhance safety and service, provide proactive communications with in-transit visibility, and help reduce supply chain costs. Shippers also rely on their most dependable brokers, such as UTXL, to support their core carrier group during surges and to back-haul their dedicated fleets.

How does a broker affect good service? Most of our customers' shipments have a high consequence of failure – bad, expensive things happen if we don't deliver on time. We cannot fail our customers or their supply chains. Our proven carrier vetting process plays a huge role in achieving our excellent service record. We strive to match, and often exceed our customers' selection standards that they use to select their direct core carriers.

As a result, UTXL utilizes fewer carriers than other large brokers. Even so, our extensive database of contract carriers includes more than 500 carriers that have been licensed and safely operating for over 25 years. These carriers have an average fleet size of 35 trucks and combined assets of over 17,500 trucks. Many can provide drop trailers for loading or unloading.

Can a broker really enhance safety? In our 20-year history, there has never been a single dollar charged to any of UTXL's extensive insurance policies or bonds. For the few cargo claims that have occurred, each one was processed to the complete satisfaction of our shippers.

For one of our long-time customers, we have arranged door-to-door transportation of over 100,000 expedited, high-value truckloads – without a single cargo claim.

How can a resourceful broker provide responsive and dependable capacity? Small and medium-sized carriers are nimble and typically specialize in niche service lanes to get their drivers home (lower driver turnover) and their trucks maintained (fewer breakdowns). However, unlike large carriers, niche carriers have little or no sales support or TMS/EDI capabilities and are effectively "invisible" to most shippers.

A good broker efficiently connects this vast "invisible" capacity to the transportation marketplace by performing these necessary customer service activities for many carriers, as a seamless, single point of contact. Our comprehensive systems enforce compliance with all of our processes and send automated alerts if deviations occur. Management is engaged, and accessible around the clock.

For Van or Refrigerated Pricing (full trailer or multi-stops) visit www.UTXL.com or contact me anytime at: mhogan@UTXL.com and together, let's expedite excellence.

2019 CAPACITY!
Nationwide

UTXL
Corporate Office
12200 NW Ambassador Dr.
Kansas City, MO

Direct Telephone:
(816) 891-7770
Toll Free: (800) 351-2821
www.UTXL.com

Verst

Paul T. Verst
President & CEO

Our Core Purpose:
To extend the expertise, capabilities and reach of our clients by providing logistics and packaging resources that relieve the need for operational investment, increasing speed to market and lowering costs.

Our Core Values:
Innovation
Excellence
Respect
Safety
Teamwork

We are an *Inbound Logistics* Top 100 3PL. We provide warehousing, fulfillment, transportation and packaging solutions throughout North America.

Verst Provides a Broad Portfolio of Logistics Services

WAREHOUSING & DISTRIBUTION
- Inventory Management
- Reverse Logistics/Returns Management
- 21+ Dedicated & Multi-Client Locations
- Rail Served
- Automotive, Paper, Food & Beverage, Consumer Products
- Cross Docking
- (VMI) Vendor-Managed Inventory
- Value-Added Services
- Kitting
- Pick & Pack

FULFILLMENT
- Key Midwest Transportation Corridor
- 1 – 2 Day Ground to over 85% of U.S.
- Competitive Parcel & Freight Rates
- Shopping Cart Integration
- B2B & B2C
- 100% Order Accuracy
- Automated Systems
- Customized Billing & KPI Reporting
- Customer Web Portal
- Low IT Startup Cost

TRANSPORTATION SERVICES
- Brokerage
- ELD Compliant
- Full Truck Load
- Expedited Reefer Service
- Load Planning
- Electronic Load Tendering
- Freight Bill Audit & Payment
- Order-to-Delivery Visibility

DEDICATED TRANSPORTATION
- Dedicated Contract Carriage
- Experienced Drivers
- GPS Tracking
- GEO Fencing
- Time Critical & Window Deliveries

CONTRACT PACKAGING
- Technology-Leading Shrink Labeling
- Largest North American Shrink Sleeve Labeler
- Bundling and Kitting
- POP Displays
- High-Impact Graphics
- Custom Packaging

INTEGRATED LOGISTICS SERVICES
- Network Design
- Modal Optimization
- Event and Returns Management
- Private Fleet Analysis
- LTL Consolidation
- Customized Invoices
- Consulting Services

TECHNOLOGY
- Integrated TMS
- Advanced WMS Software
- Best-in-Class Application Suite
- Enterprise-Class Infrastructure
- Customer Web Portal
- 24 x 7 x 365 Support
- Full EDI Capabilities
- Voice-Activated Pick Technology

Verst Logistics
Our business is . . .
an extension of your business

Verst Logistics
300 Shorland Drive
Walton, KY 41094
1-859-485-1212
Fax: 859-379-1276
www.verstlogistics.com

Volta Logistics

OUR MISSION
WE FOCUS ON SPEED, SERVICE AND SAFETY.

To Volta Logistics, your business is more than an account. It's not just another load for us. Our analysts and representatives are devoted to the logistical health of your company. We work tirelessly, focused on you, to bring intelligent and appropriate shipping solutions.

Value
Opportunity
Loyalty
Trust
Accountability

This industry deserved better service. Volta Logistics was born.

The quality of the relationship directly correlates to the quality of the business. We rely on steadfast personal communication to ease stress and foster confidence from our shippers and carriers. This approach has secured competitive pricing across the United States and Canada, allowing us to deliver answers to complex shipping problems and service our customers' needs wherever they need it.

TO GROW QUICKLY, YOU NEED THE RIGHT TOOLS

Creating an environment that facilitates fast and frictionless growth requires a technology infrastructure with the same principles. Volta Logistics relies day-to-day on a transportation management system built for growth. DAT® is our powerhouse technology partner who has helped us build a scalable, limitless and fluid business model.

BETTER COMMUNICATION. FIRST CLASS LOGISTICS.

Freedom is found in the thousands of national carriers we partner with every day. From start to finish we do things better.

Contracted/Primary

We have the capacity to be your primary carrier. Our network of drivers is best in business.

Fixed price

Through our fixed price services, we strive to honor static pricing without volume commitments.

Project only

Practical solutions, clear pricing and dedicated service mean your project is our project.

Spot quote

We offer spot and surge pricing to keep your supply chain moving even during unpredictable times.

Expedited shipping

For those that needed it yesterday, our rapid expedited shipping is available.

Team drivers

Time sensitive shipments can be readily handled through our team drivers.

Government

We work with government services to deliver confidential and sensitive freight.

Hazmat

We offer safe and fully compliant movement for delicate freight from packaging to transport.

Volta Logistics
1515 Central Ave NE Ste 120
Minneapolis, MN 55413
844-565-8290
moveit@voltalogistics.com
voltalogistics.com

Wagner Logistics

The Wagner Way
The Wagner family founded the company on the principle that every customer is a big deal. Seventy years later "The Wagner Way" continues to redefine service through our integrity of actions and genuine customer focus.

Our can-do culture creates a mindset that fosters a distinct competitive advantage for our clients. We want to tackle your most complex supply chain challenges. Whatever it is, whatever it takes. We say, "Bring it."

Wagner Logistics
1201 E. 12th Avenue
N. Kansas City, MO 64116
www.wagnerlogistics.com

Sales & Marketing
816-293-3503

Inbound Logistics TOP 100 3PL PROVIDER 2018

Honored eighteen years in a row

WAGNER LOGISTICS

Bring it.

Wagner Logistics started servicing customers' needs in 1946 and grew into a premier full-scale North American 3PL.

The company remains dynamic by being nimble when competitors cannot. We began by servicing customers' transportation needs and now offer contract warehousing, robust fulfillment, network analysis and top-notch transportation services.

Wagner Logistics was founded on the principle that every customer is a big deal, which drives our service today. It is the culture of our people that maintains our reputation of stellar service and we are ready to face your supply chain challenges with you.

Dynamic Transportation

Customers have trusted Wagner to deliver critical freight for over 70 years. Many companies offer freight solutions and only perform when it benefits their bottom line. We understand that when a promise is made you must perform. That understanding is the reason Fortune 100 companies bring thousands of shipments to our capable team.

Wagner Logistics will work through the tough freight issues rather than taking just the low hanging fruit. We haul the freight to consignees that fine for late delivery because we know how to make it on time. Your drop trailer freight, bring it. We deploy assets when consistent volume demands consistent capacity.

We can provide a complete freight management solution to fit your needs. We have a great parcel program in place.

Contract Warehousing

Customers rely on our expertise in network analysis and facility placement to consolidate operations and maximize savings.

Wagner understands how to transition your distribution operation when others are failing. We know how to take you into a new market with flawless execution.

Our start-up team is fast, precise and knows how to avoid the road blocks. Coast-to-Coast, we have you covered.

Fulfillment

Wagner Logistics opened our fulfillment services offering over 25 years ago. Ecommerce has changed distribution and internet shopping has forever changed customer expectations. Wagner worked out the kinks years ago and was ready when the ecommerce changes hit.

Our brand-new fulfillment operation is in the heartland to allow our customers to reach over 80% of the population in 2 days with ease.

Wen-Parker Logistics

John Singleton
Chairman &
Chief Executive Officer

Mission Statement
Our mission is to provide customized global supply chain solutions that deliver value, innovation, and world-class service.

US Offices
- New York
- Los Angeles
- Miami
- Louisville
- Columbus
- Columbus (Warehouse)
- Detroit (Sales)
- Boston (Sales)

Wen-Parker Logistics, Inc.
1975 Linden Boulevard
Suite 420
Elmont, NY 11003
(888) 978-3029
info@wen-parker.com
www.wen-parker.com

Wen-Parker Logistics (WPL), a leading global freight forwarder and supply chain solutions provider, is headquartered in Elmont, New York. WPL operates a total of 27 offices worldwide, supplemented by a robust global network of agent partners in close to 100 key sourcing and consumer markets worldwide.

In 2018, the Wen-Parker brand continued to grow domestically and internationally. The first strategic brand move was the opening of the new warehouse facility in Columbus, Ohio. The Alum Creek location is across the street from Rickenbacker International Airport (LCK) and has easy access to all major highways and Terminal/Container Yards.

Only a few months later, the WPL brand name expanded overseas when the Ho Chi Minh office officially opened on November 1st, 2018. The office in Ho Chi Minh City is Wen-Parker's 9th in Southeast Asia and marks the 3rd new location to open since July 2016 when WPL opened in London (since expanded) and Hanoi in 2017.

Whether it is opening a new warehouse facility or new office, Wen-Parker Logistics is always looking for ways to enhance our business partners' revenue and competitive edge, through the utilization of a well-managed supply chain model. Equipped with extensive industry experience and supported by leading-edge information technology and business tools, Wen-Parker Logistics provides a customer experience unlike any other within the transportation and logistics industry.

Our global supply chain services include Air & Ocean Freight Forwarding & Consolidation, Customs Brokerage, eBusiness, Trucking & Container Drayage, Warehousing & Distribution, Purchase Order Management, and a comprehensive menu of value-added supply chain services and technology solutions.

WPL
WEN-PARKER LOGISTICS

Werner Enterprises/Werner Logistics

Derek Leathers
President & CEO

Purpose Statement
To deliver world-class supply chain solutions to the global marketplace responsibly and safely while exceeding the expectations of our customers, shareholders and associates.

Werner Enterprises
14507 Frontier Rd.
Omaha, NE 68138
800.228.2240
www.werner.com

Average Is for Other People

Werner Enterprises, Inc. was founded in 1956 and has evolved from a one-truck operation to the full-service premier transportation and logistics company it is today, with coverage throughout North America, Asia, Europe, South America, Africa and Australia.

Werner is among the five largest truckload carriers in the United States. We invest in the best at Werner, providing our professional drivers with more home time, competitive pay and the newest equipment in the industry. Our philosophy is to stress quality over quantity, and this principle is evident in every aspect of our company.

In 1998, Werner was the first carrier to receive FMCSA approval to implement electronic logging devices. Werner is committed to conservation and sustainability. Since 2007, Werner has saved more than 237 million gallons of fuel and reduced the company's carbon footprint by more than 2.6 million tons.

Werner also developed the first truck driver apprenticeship program in the industry approved by the Department of Labor and the Department of Veterans Affairs. Werner is a proud supporter of military veterans and veteran spouses, who comprise approximately 20 percent of the company's workforce.

Beyond the Assets

Werner maintains its global headquarters in Omaha, Nebraska, and maintains offices in the United States, Canada, Mexico and China. Werner's comprehensive solutions are supported by leading-edge technology, experienced professionals and an extensive global network.

Werner's diversified portfolio of transportation services includes one-way van, dedicated, cross border Mexico and Canada, expedited, temperature controlled, freight management, brokerage, intermodal, flatbed, ocean and air, global freight forwarding, final mile and home delivery.

Werner Logistics is a comprehensive Top 20 logistics provider and key component of the company's portfolio of transportation services solutions. Werner Logistics generates over $500 million of revenues annually with operations in over 150 countries.

Werner is committed to reinvesting millions in our 5T's initiative: trucks, trailers, talent, terminals and technology. While the average age of trucks in the industry is over five years, Werner's average truck age is 1.8 years. A newer fleet means less maintenance downtime and more productive miles.

With more than 60 years in business, Werner maintains a strong financial condition with low debt. Werner has consistently profitable financial results, a solid financial position and is publicly traded on NASDAQ under the symbol WERN.

WERNER LOGISTICS

Zero Down Supply Chain Solutions

Brad McBride
CEO

Mission Statement
Our mission is to make an impact on traditional industry practices and provide considerable savings for businesses. We are passionate about helping companies achieve supply chain savings and efficiencies through our formal bid process, best-in-class auditing services and in-depth business intelligence.

At Zero Down Supply Chain Solutions, we provide our clients with a consultative-style approach that dramatically reduces transportation and supply chain expenses while providing unparalleled visibility. Our team comes prepared with decades of carrier and client-side experience in sales and operations. With this experience came the knowledge that most customers don't have the time, technology, or expertise to negotiate favorably with their carriers or leverage their data to obtain optimal rates and bottom-line savings.

We put an end to that disadvantage.

Since 2003, we have been passionate about helping companies achieve savings and efficiencies in all modes through our best-in-class Audit and Optimization services, robust Business Intelligence, and our cutting-edge Transportation Management System. Our services are powered by the leading technology of our proprietary software suite, FreightOptics.

We leverage the most innovative logistics platform in the industry – our own!

As the supply chain industry undergoes a digital transformation, our software leads the competition in technological capabilities, overall visibility, and ease of use. FreightOptics is a cloud-based platform that was conceptualized by a team of technology and supply chain industry leaders in search of a comprehensive, profit-driven software solution that enhances supply chain visibility.

FreightOptics analyzes each critical element of your supply chain to maximize all savings opportunities and streamlines your shipping data into one consolidated dashboard that can be customized to fit your individual needs.

With a winning combination of human intelligence and advanced technology, FreightOptics provides ultimate visibility over the critical details of your supply chain and ensures profits stay right where they belong.

If you're involved in supply chain operations, we can save you money.

Our customers include any organization that has supply chain movement. We work with shippers, carriers, 3PLs, freight forwarders, LTL companies, fulfillment companies, and other supply chain solution providers. Plus, we serve all modes, both domestic and international: Courier, Small Parcel, Less than Truckload, Truckload, International Air and Ocean, and Ocean Contracts direct with steamship lines.

Services

- Parcel and Freight Audit & Pay
- Business Intelligence
- Optimization
- TMS
- Visibility to Warehouse Metrics
- Packaging Analysis
- Duty Drawback Recovery
- Bid Management
- Cost Allocation General Ledger Coding

Zero Down Supply Chain Solutions
Powered by the technology of
FreightOptics Your Eye on Freight

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