

MAY 2021

SPECIAL REPORTS

PALLET POWER

**INTERMODAL
MEETS THE
MOMENT**

inbound logistics

a **II THOMAS** company

THE MAGAZINE FOR DEMAND-DRIVEN ENTERPRISES

**FULFILLMENT
NOW
BUILT FOR E-COMMERCE**

PLUS

TMS & YMS: IT'S TIME

**CONVEYING THE
NON-CONVEYABLE**



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Info SNACKS

BITE SIZED SUPPLY CHAIN/LOGISTICS INFORMATION

MANY UNHAPPY RETURNS

For every \$1 billion in sales, the average retailer incurs \$106 million in merchandise returns.

—The National Retail Federation



Dollar General Shops for Drivers

Dollar General plans to hire up to 20,000 staffers, including drivers for its private truck fleet. The retailer's private fleet has grown from 80 tractors at the end of fiscal 2017 to more than 700 tractors and more than 550 drivers in spring 2021.

The retailer's hiring blitz follows plans to open more than 1,000 new stores in 2021.



TAKE ME OUT TO THE HAUL GAME

Freight brokerage firm Total Quality Logistics (TQL) is now the official naming rights partner of TQL Stadium in Cincinnati, where the company is headquartered. The multi-year naming rights partnership includes signage, a seating zone, a branded bar area and extensive opportunities for employee engagement. TQL Stadium's first-in-the-world lighting technology will feature the company's logo moving across the stadium exterior.



PUTTING STOCK in TRANSPORTATION

Shares of airlines, railroads, and trucking companies are rolling to their longest streak of weekly gains since January 1899, fueled by investor optimism that a resurgence in economic growth will boost profits at transportation companies, according to *The Wall Street Journal*.

The rally underscores investors' expectations that the rebounding economy will lift the performance of companies carrying goods and raw materials, says the *WSJ*. The transportation average has gained more than 23% in 2021 to record levels, beating the Dow Jones Industrial Average's 11% climb to its own recent highs.

Is it Cold in Here or Is It Just Me?

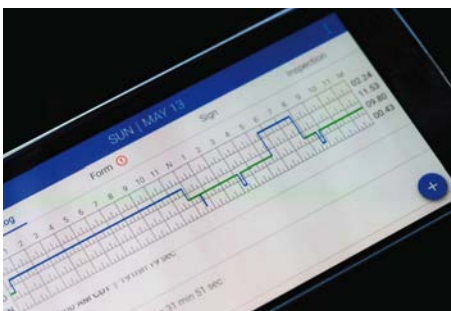
42 YEARS

The average age of a cold storage facility in the United States. Users now demand newer, state-of-the-art, temperature-controlled facilities.

Markets are demanding an additional **75 TO 100 MILLION SQUARE FEET** of freezer/cooler space over the next 5 years.

A sharp uptick in demand for food delivery services due to the pandemic has driven an increase in cold storage across the logistics chain; finally rents are high enough that investors can get better returns than from standard warehouses.

—Karis Cold research



ELDs GET THE JOB DONE

“Trucks equipped with electronic logging devices (ELDs) experienced a 53% lower driving-related hours-of-service violation rate in 2020, and a 49% lower non-driving-related hours-of-service violation rate.”

—Michael Ahart, vice president of regulatory affairs, Omnitracs, citing Department of Transportation research at the American Trucking Associations' Technology & Maintenance Council virtual spring meeting

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The leap in e-commerce sales for non-conveyables such as bicycles, treadmills, and furniture is a bright spot during a difficult period, but presents some unwieldy fulfillment challenges.



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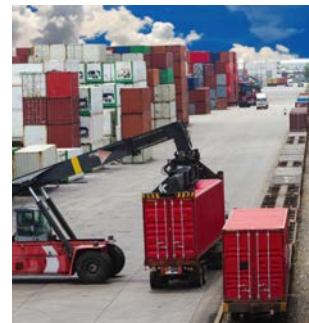
INSIGHT & YMS GUIDE

A yard management system (YMS) can streamline your operations by managing shipments from the yard gate to the dock. Find out how to transform your yard into a source of efficiency, and use this short list of leading providers to start your search for the right solution.



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Sometimes overlooked, pallets are critical to successful supply chain management, supporting efficiency goals and sustainability objectives.



78 SPONSORED INTERMODAL MEETS THE MOMENT

In a supercharged supply chain, intermodal options are more coveted than ever. Discover how some standout companies contribute to its bright future, even amid changing conditions, behaviors, and preferences in the freight market.

ABOUT THE COVER

A conveyor belt speeds e-commerce fulfillment in Gap's distribution center in Fishkill, New York. Photo courtesy of Gap.



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A typical career path wouldn't take you from European tennis pro to co-founding an apparel factory in Africa, but Marc Hansult did just that. His company—DTRT Apparel—has since become one of the largest private employers in Ghana, with a 98% local workforce and a mission to drive positive change.



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What fictional character or historical figure would you put in charge of global vaccine logistics and distribution?



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Steel bar protects cargo and more security innovations

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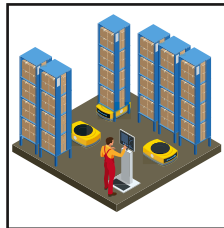


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MORE NEWS ONLINE



THE FUTURE OF WAREHOUSE WORKERS

Store shutdowns and consumer hesitancy to shop in person has spurred e-commerce demand, putting a major strain on warehouses and exacerbating labor shortages. What role can technology play in solving these issues?

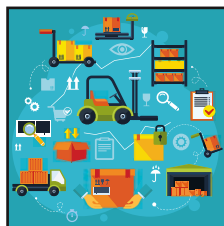
bit.ly/FutureWarehouse



DOES LEAN HAVE A LIMIT?

By moving toward automation and robotics, warehouse operators can save 70% in overall operating costs while meeting evolving customer service needs. It's that flexibility—rather than lean operations—that can maintain resilience.

bit.ly/LeanLimit



3 STEPS TO A MORE AGILE SUPPLY CHAIN

What does operational agility look like for consumer packaged goods companies, and how can they engage in the digital transformation needed to unlock that agility? These three steps can help CPG supply chains attain a heightened level of responsiveness and flexibility.

bit.ly/SCAgility

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Robots and People: Co-Evolving



Keith Biondo, Publisher

Robots and people are adjusting their symbiotic relationship in logistics. Our recent robotics coverage (Feb. 2021) generated a good amount of audience feedback, most related to the growing importance and essential need for humans in logistics.

It's true that the stresses created by the virus economy spawned an increase in investing in automation to take on more human-related tasks. Yet manufacturers of wearable technology make the case that wearables and new handheld devices remind us that humans have the edge over robots in terms of efficiency, flexibility, and costs for many supply chain-related jobs.

Robots and people in supply chain is a dynamic relationship. Walmart removed 300 robots and “hibernated” more than 1,000 others from its stores. One reason? Customers did not like them.

In 2020, Walmart also stopped using in-store inventory tracking robots, citing studies that humans could do the tasks much faster. Did store shopper preferences and national sentiment to keep people employed play a role in that decision, too?

Both Walmart and Kroger, with its hyper-speed robotized “sheds”, are riding the huge wave of increased online orders requiring heavy investment in e-commerce automation as Amazon has done since it acquired Kiva. Walmart plans to construct warehouses in or near stores where robots will travel, gather, and prepare orders for customer pickup or home delivery, completing the task in about one hour. The machines won't roam the aisles inside the store, but will be in the warehouse area, safely secured behind windows so shoppers can watch the automated activity like a robot zoo.

In this case at least, robots are relegated to activities that people want instead of what they are, and will be, capable of doing. Sector observers pegged the automation market at \$15 billion last year; predictions are it will near \$50 billion in two years.

Will concern about the impact complete automation will have on the humans in the logistics workforce limit that growth? Maybe. “Robotics in and of themselves are not the answer,” says Kevin Beasley, chief information officer of VAI, an ERP solutions developer. “Workers in warehouse and logistics operations are now knowledge workers. People can do tasks that robots cannot do and one is not necessarily better than the other. They are better together when they are working together.”

Human insight and experience play a crucial role in meeting modern demands on supply chain operations despite what those outside our discipline think. In logistics, robots will dance with people and each will lead at different times as roles shift.

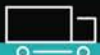
The evolution continues. ■

Keith Biondo



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GOODQUESTION

Readers Weigh In

What fictional character or historical figure would you put in charge of global vaccine logistics and distribution?



SUPERHEROES

Tony Stark, aka Iron Man, understands how to harness business and technology to get results—even if some of the measures needed are unpopular. His attention to detail and insatiable appetite for perfection would allow him to pivot and change course when faced with gaps in the distribution process that others may fear.

—Cory Turner
Senior Director, Healthcare Strategy,
Tecsys

Tony Stark. This individual made a career in technological weapons manufacturing. He acquired global outreach through this platform. His life turned humanitarian with his mind set on humanity. He has the infrastructure and distribution platform to create “a suit of armor around the world”—aka the COVID-19 vaccination.

—Ryan Camacho
Director of Strategy and Business Development
Axele, LLC

Superman. Doctor Strange is a good second.

—Michael Zimmerman
Partner
Americas Lead, Kearney

X-Men’s Professor X. His Cerebro machine for tracking mutants could easily track end-to-end vaccine distribution and ensure efficient delivery. While Cerebro only exists in fiction, cloud-based supply chain visibility solutions—paired with GPS and cellular-enabled tracking devices—can provide equally powerful levels of intelligence and visibility into shipments.

—Jeff Clark
SVP, Product Management
CalAmp

Barry Allen, aka the Flash. The Flash, traveling at the speed of sound, can expedite deliveries of the vaccine and/or run to a previous moment in time to vaccinate people before a major outbreak occurs.

—Mark McCullough
CEO, Gebrüder Weiss USA

Teddy Roosevelt. Read the book *River of Doubt*. Imagine a modern-day president catching a one-way flight to Mars, with no concrete plans for a return flight. He would have to get to Mars, find materials, build a return rocket, and coordinate a return flight to Earth. This is the equivalent to what Teddy Roosevelt did in 1914. If he can do that, he can distribute vaccines.

—G. Michael Rentz
Chief Revenue Officer
Gnosis Freight

Sealand founder Malcom McLean created the container shipping industry with his radical idea to offload “containers” from a chassis to a ship. The creation of new solutions to old challenges or complexities will be what drives the industry forward. Global vaccine distribution would be in good hands with Malcom McLean.

—Michael Britton
Managing Director
Sealand Americas

German composer and pianist **Ludwig van Beethoven** created some of his most mature music after becoming almost completely deaf in 1814. The novelty of this international crisis and the transportation of such valuable, yet so perishable, loads requires a “composer” who can plan and deliver great results.

—Ralph Riehl
Managing Director Americas
DACHSER Americas Air & Sea
Logistics Corp.

Jon Snow from Game of Thrones. A natural-born leader who puts saving mankind ahead of his own self interest. Undeterred by unprecedented obstacles, he is committed to staying the course, taking calculated risks

and strategically pivoting when necessary—all while asking enemies to put down their swords and work together toward a common goal.

—**Lisa Aurichio**
Executive Director
Containerization & Intermodal Institute

Quint from Jaws. “Y’all know me—I’ll kill this COVID, but it ain’t gonna be easy. I’ll make the vaccine available for \$3,000, but have ample supply for five, and have shots in the arms within four months for \$10,000. That’ll bring back the tourists and put businesses on a payin’ basis. I will get this done, FAST!”

—**Gregory W. Tuthill**
Chief Commercial Officer
SeaCube Containers

Dwight Eisenhower. Besides having a talent to get along with strong-minded personalities such as Churchill, Patton, and Montgomery, he had a thorough grasp on logistics. Eisenhower championed and signed the Federal Aid Highway Act of 1956; he understood an interstate highway system would help continued economic growth.

—**Gisela Hausmann**
Logistics Professional
Author, *Inside Amazon: My Story*

Mary Fields, aka Stagecoach

Mary, was fearless, and the first African-American female “star-route” mail carrier. A “star-route” carrier was contracted out by the government to deliver mail to tough-to-reach locations. Mary’s tenacity for protecting vital assets and ensuring the safe and timely delivery of goods would translate to the most efficient and secure global vaccine distribution.

—**Gabe Grifoni**
CEO and Co-founder
Rufus Labs

Frank Bunker Gilbreth and his wife **Lillian** of the semi-autobiographical 1940s novel *Cheaper by the Dozen*. Frank and Lillian were efficiency experts and constantly doing time and motion studies on their children. If they could corral 12 children on a daily basis, they could easily handle logistics.

—**Barbara Rainville**
Marketing Manager
Maple Landmark Woodcraft

WISH GRANTERS

The Tooth Fairy. With extensive experience operating a global network with a proven consistent, reliable, and flawless distribution method, the Tooth Fairy has the skills to lead an effective distribution operation ensuring that all recipients received their vaccine at the right time and the right place—assuming they would waive the tooth fee, of course.

—**Mike Wilson**
CEO, Consolidated Chassis Management

The world needs an expert in global dynamics, complex supply chains, route optimization, and challenging logistics. They must manage tight timelines and understand cultural nuances. These key characteristics lead to only one magical character: **Santa Claus.**

—**Anne Robinson**
Chief Strategy Officer
Kinaxis

Santa Claus manages to deliver billions of presents in a 24-hour period (well, technically 31) tapping into a vast and global network of elves to get it done. Who better to get the vaccines to everybody in the world?

—**Richard Howells**
Vice President, Awareness and Thought Leadership,
Digital Supply Chain, SAP

Dan Cathy, CEO, Chick-fil-A.

The Chick-fil-A drive-through is a high-quality, efficient model with superb customer service. Their ability to change and adapt during the pandemic was incredible and demonstrated the strength of their leader, who guided an organization to tackle challenges head-on and swiftly implemented solutions.

—**J.J. Cartledge**
Senior Consultant
BH3M Associates

Elizabeth Blackwell. She was a resilient pioneer and organizer in the field of medicine. In addition to being the first woman to receive a medical

degree in the United States, she made contributions to the promotion of women in medicine and played a significant role during the American Civil War by organizing nurses.

—**Jeanet Wade**
ForbesBooks author of *The Human Team: So, You Created a Team But People Showed Up!*
Founder, Business Alchemist

Sun Tzu. As a practical and resourceful leader, he was goal-driven and agile in his strategies. He strived to operate in a frictionless way, to maximize resources and keep morale high.

—**Will Eadie**
Chief Revenue Officer
WorkJam

Have a great answer to a good question?

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

How has the pandemic affected supply chain partnerships?

We'll publish some answers. Tell us at editorial@inboundlogistics.com or tweet us @ILMAGAZINE #ILGOODQUESTION



[INSIGHT]

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FROM SHIP TO SURE

My wife and I were hanging out at Jones Beach in New York when we saw all these container ships in the distance. Not being in logistics, my wife was curious about getting more information about these ships. My solution? We get home and I open a copy of *Inbound Logistics* and she gets a full education.

—Richard Bacher

That advice stuck with me over a more-than-30-year career.

—Mike Pascal

Career Logistics Professional

Re. Checking In, February 2021: Buddy, Can You Spare a Can?

bit.ly/Feb2021_CheckingIn

I'm a long-time reader. Your February Checking In editorial was refreshing and right on target. As far as I can recall, you are one of the few people in our industry who has correctly pointed the finger at the Chinese government. I hope the Biden administration doesn't play footsie with China when we need hard concerted action.

The American public generally has no idea what kind of hardball the Chinese play and how tough and resilient the people are. Americans are too focused on short-term results. As always, time will tell.

—Jack Ampuja

President, Supply Chain Optimizers
and President, E-commerce Optimizers

in the industry—demand-driven material requirements planning.

This planning process helps to mitigate disruptions in production when there is an unexpected spike in demand, or a shortage occurs. This method sees stock not as waste, but as strategic inventory buffers so manufacturers can plan for uncertain events and increase supply chain and production agility.

—Colin Elkins

Vice President, Engineering,
Construction & Infrastructure, IFS

It has been another incredible month, in a unique year, for the container shipping segment. In the United States, we continue to see severe delays and bottlenecks, with strong demand driving rate development. Some shippers are reportedly paying double the contracted rates they enjoyed just one year ago.

Meanwhile, in Europe, the Suez Canal incident has created a backlog that has seen ports overwhelmed with cargo, while sailing schedules have suffered a “domino effect” disruption. Furthermore, shippers with cargoes on the affected ships have had initial delays to goods exacerbated by carriers dumping containers wherever they can in a rush to load available empty containers and get back on track.

This means a rash of consignments are stranded in the wrong locations with no plans to rescue them. Seen as a whole, the situation leaves carriers in a position of supreme strength, essentially able to pick and choose assignments and customers, and does not bode well for shippers desperate for rate relief.

—Patrik Berghund
CEO, Xeneta



Re. Good Question: What's Your Best Importing or Exporting Advice?

bit.ly/GQ_import_export

The best advice I received when first entering the import/export world was from a seminar speaker who worked at the Export Administration, now the Bureau of Industry and Security.

He told me for any export: “When in doubt do not ship it out” and to make sure all documents were correct.

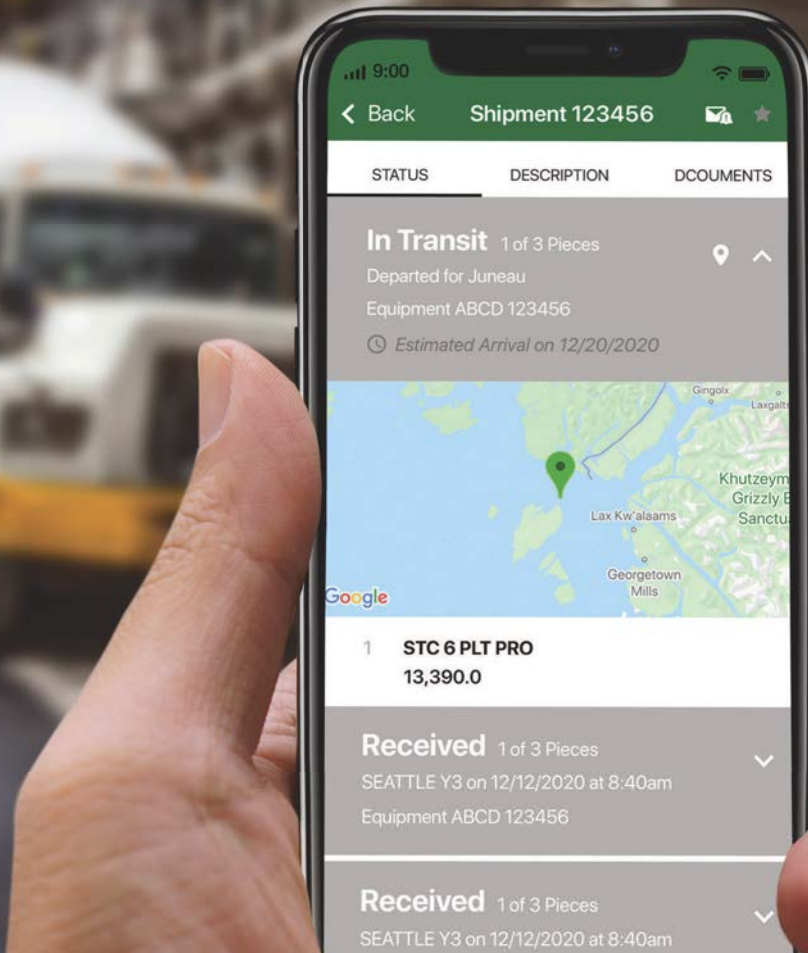
For imports he told me to double check the paperwork from the broker and to look for any incorrect valuations, or mistakes in classification.

Fast TAKES



On Global Supply Chain Disruptions

From COVID-19 vaccine production to the heavily laden container vessel that was stuck in the Suez Canal, recent events have thrown global supply chains under public scrutiny. Consequently, one practice is starting to gain credence



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10 TIPS

Optimizing Your Transportation Network

Optimizing a transportation network is complex. It requires an ideal combination of personnel, tools, and strategic alignment. Here is a map to help support your journey.

1 DEFINE PERFECTION

What is the ultimate goal of optimization—a state of near-perfect results? The cost/service balance can be very different for a company that ships medical supplies as opposed to a company that ships steel. Is freight cost, total time in transit, total supply chain cost, total cost to manage, or some combination of this “perfect?” Define what your “optimal” freight network looks like.

2 SURVEY YOUR CUSTOMERS

Optimization starts with your customer. To avoid delivering too frequently, too slowly, or at an unacceptable cost, understand what your customer needs before you significantly change how you manage transportation.

3 LEVERAGE YOUR DATA.

Your enterprise resource planning system, billing system, and carrier/3PL freight bills provide plenty of information. Key data for studying optimization include: earliest/latest ship and delivery dates, order size, weight, and origin/destination locations.

4 RUN FREIGHT MODEL SCENARIOS.

Do you have the tools and personnel in-house to effectively run “what-if” scenarios with your freight? Can you mass-rate weeks-worth of freight for all modes?

Can your system suggest mode conversion? Can it build multi-stop truckloads? Design pool distribution scenarios? Consider doubling or halving your order size by select customers? If the answer is “no” to any of these, consider talking to a consultant or 3PL.

5 TEST BEFORE IMPLEMENTATION.

Test scenarios to validate results prior to major investments and implementation.

6 OVERCOME HURDLES.

Talk to your freight partners, carriers, and technology providers. Once you optimize

your freight network, many things will change. Your carriers will have different routes at different times. Your customer’s experience will change. Anticipate hurdles and proactively communicate to ensure minimal disruption.

7 ASSESS TECHNOLOGY CAPABILITIES.

Optimizing freight without a transportation management system (TMS)—or a 3PL that operates a TMS—is not likely sustainable. Due diligence in TMS or 3PL selection is a must. A system may offer “optimization,” but be sure it meets your needs, and the provider has the ability to execute your deliverables.

8 DETERMINE FREIGHT PLANNING EXPERIENCE AND TALENT.

Some freight networks can be repeatable—the automotive industry often runs on a static schedule. Others, like consumer goods, retail, and grocery can be more dynamic. Ensure you have the right supply chain team or partners to manage a flexible and changing environment. If there is volatility in order size, date, timing, or special requirements, anticipate conflict even with the best plans.

9 CONSIDER ALL POSSIBILITIES.

Optimization enables the best selection of options such as consolidation, pool distribution, zone skipping, mode conversion, multi-stop truckload building, deferred service, milk runs, dedicated carriage, spot-market pricing, and volume pricing, based on customer requirements.

10 CONSIDER COLLABORATION WITH OTHER SHIPPERS.

The best optimization occurs (a) with a significant amount of freight, and (b) when there is excess lead time at shipping and customer delivery locations. B can be discussed with your customers, but A is tough to build organically. Consider partnering with other shippers in your area or a 3PL that can help coordinate a freight consolidation solution.

SOURCE: DAVE GIBLIN, VICE PRESIDENT, ODW LOGISTICS

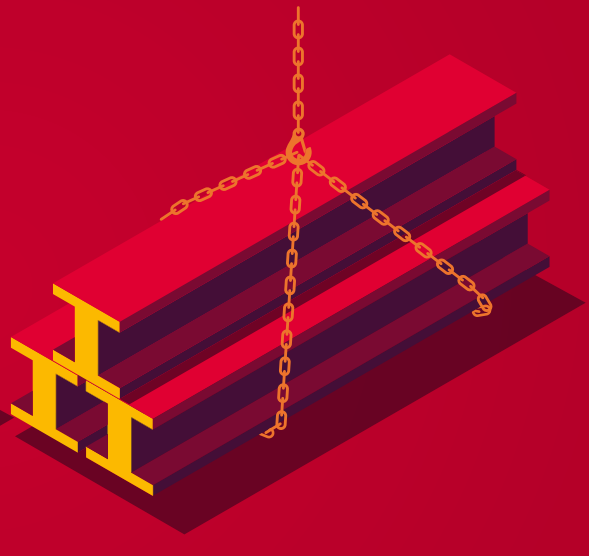
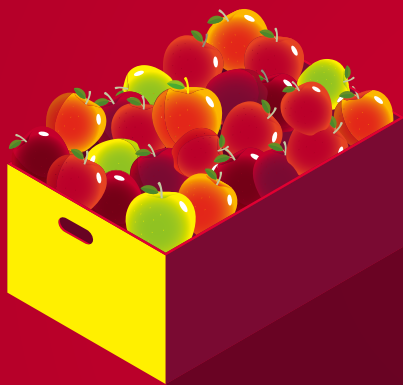
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—National Council of Textile Organizations



MASKED IN THE USA

The Biden Administration awarded contracts to Parkdale Mills and Ferrara Manufacturing to help manufacture and distribute 100% made-in-America face masks to more than 1,300 community health centers and 60,000 food pantries and soup kitchens in the United States.

North Carolina-based Parkdale Mills, the nation's largest cotton yarn spinner, partnered with Ferrara Manufacturing, a tailored clothing company based in New York City, to manufacture more than 17 million reusable masks. The government says it can purchase up to 22.2 million masks under the contracts.

Both companies will contract with U.S. companies across the manufacturing supply chain. Parkdale will use yarn from its facilities in North Carolina, Virginia, and Georgia; Ferrara will deploy its cut-and-sew operations in New York. Since the spring of 2020, both companies retooled their operations to produce millions of masks and gowns for frontline workers.

The Department of Health and Human Services will partner with the Department of Defense (DoD) to deliver the masks to federally qualified community health centers. The DoD will also work with the Department of Agriculture to deliver masks through the nation's food bank and food pantry system.

DAWN OF THE DEADSTOCK

To address pandemic-induced material shortages, economic volatility, and environmental concerns, many retailers are working to make their supply chains circular. These initiatives help the cause by reviving deadstock material—unused fabric that fashion brands typically store or destroy. Here's how some retailers are bringing their deadstock to life:

Queen of Raw: This online marketplace works to create a network of buyers and sellers of unused fabric and automate the process. It amassed 325,000 buyers and sellers, including Cartier and H&M. Designer brand Mara Hoffman worked with Queen of Raw to list its deadstock for sale, and is considering the platform for sourcing as well.

The RealReal: This luxury consignment retailer is addressing unsellable goods by creating an upcycled collection called ReCollection. The one-of-a-kind designs are made from items donated by luxury brand partners, including Balenciaga and Dries Van Noten. The company plans to use scraps from the collection to build a library for other designers.

Student Fabric Initiative: The British Fashion Council mobilized London designers to donate their deadstock to 33 U.K. colleges to support fashion students and help reduce industry waste. The project is a continuation of the ReBurberry initiative piloted by the council and Burberry, which donated its own fabric and helped create a centralized logistics process for more brands and colleges to participate.

Fabscrap: This New York-based nonprofit works with brands in the fashion, interior, and entertainment industries to transport, store, and redistribute their excess materials. It shreds unusable material and small scraps to create insulation, carpet padding, furniture lining, and moving blankets. Fabscrap works with brands including Marc Jacobs and J. Crew, and picks up about 4,000 pounds of material each week.

**12% OF FIBERS ARE DISCARDED ON THE FACTORY FLOOR.
25% OF GARMENTS REMAIN UNSOLD.
1% OF PRODUCTS ARE RECYCLED INTO NEW GARMENTS.**

—The State of Fashion Report, McKinsey



JANSPORT PACKS UP SURPLUS MATERIALS

JanSport introduced its first backpack collection made entirely from excess factory fabric and trim. This Surplus Ski n' Hike collection gives consumers a lifetime of wear with material that otherwise would have ended up in landfills.

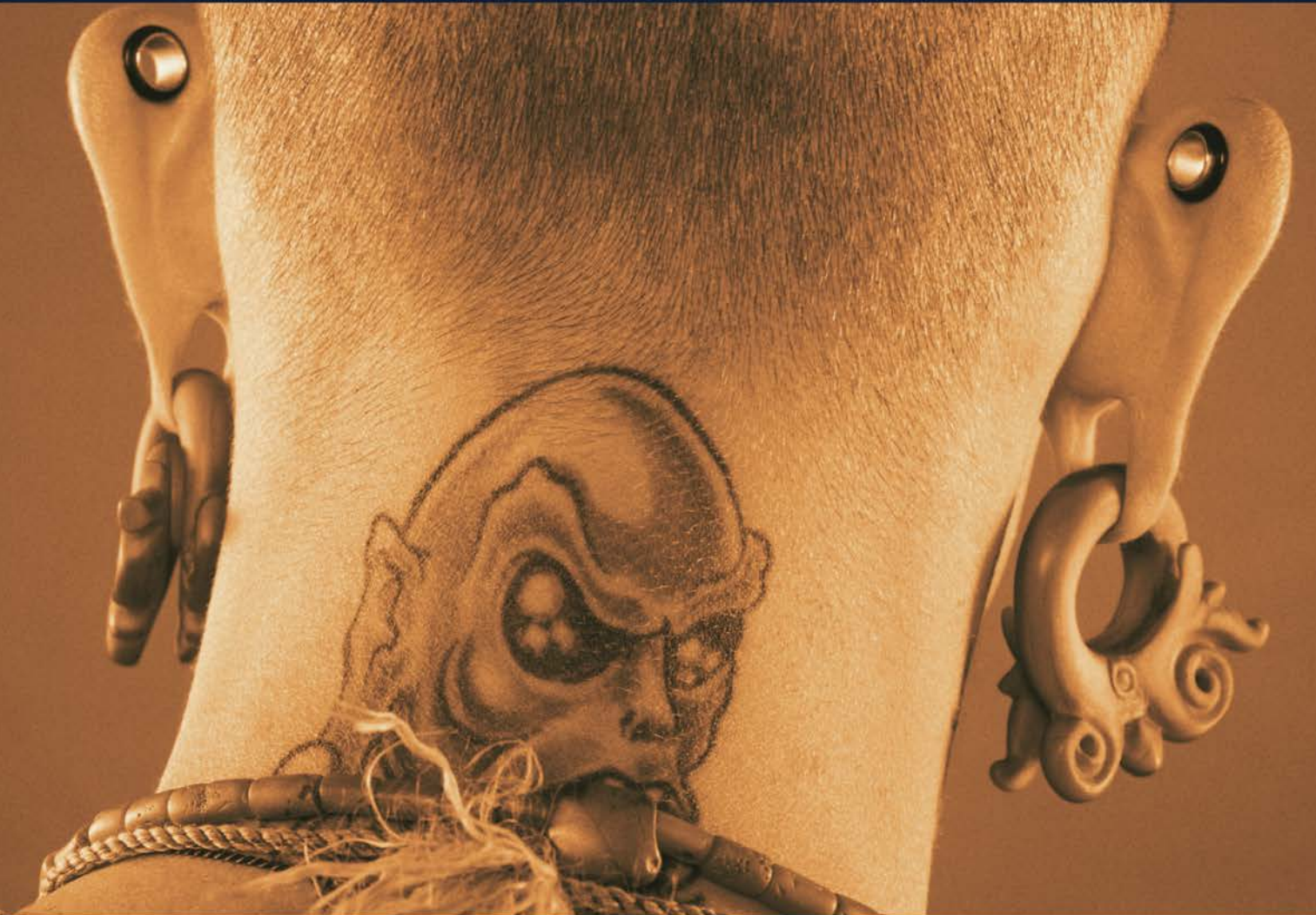
Every component of the backpacks are crafted with surplus factory materials, from the fabric and lining to the ladder locks and zipper pulls.

JanSport also uses 100% recycled paper for the products' hang tags.

Understanding Gen Z's conscious consumption habits fueled its commitment to produce more products that meet those consumers' standards of sustainability, such as the Recycled SuperBreak that launched in 2020, the brand says. This was JanSport's first backpack made in part with 100% recycled fabric.

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READERPROFILE *as told to Karen Kroll*

Here Today, Ghana Tomorrow



MARC HANSULT is co-founder and co-chief executive officer with DTRT (Do The Right Thing) Apparel, a sports and lifestyle apparel development and manufacturing company.

RESPONSIBILITIES: Defining and driving execution of company vision and strategy; overseeing all aspects of global business development, including supply chain and factory operations, sales and marketing, and product development.

EXPERIENCE: Managing director, head of global business development and merchandising, Winds Enterprises; owner, Just4Fun & Sports; tennis pro.

A typical career path wouldn't take you from being a tennis pro in Europe to co-founding an apparel factory in Africa. But that has been my career path.

When I was younger, I played tennis professionally in Germany. I achieved a certain level of success, but not so much that I could retire in my 20s. I returned to school and then, in 2004, joined a company focused on product development and manufacturing for apparel and sports accessories brands.

At the time, third-party factories in Asia did most of the manufacturing. But as costs went up and brands were forced to adjust their sourcing networks, we looked at Ghana, Africa.

In 2013, I co-founded DTRT to set an example that the apparel manufacturing industry has tremendous power to do good, drive a positive social impact, and be an effective driver for positive change. That's where the company name comes from: Do The Right Thing.

We wanted to locate DTRT where it could be cost competitive, while paying wages that could lift people out of poverty. We also invest in development of our people's technical sewing abilities, as well as their soft skills in terms of understanding what it means to be part of the formal workforce.

Africa has a huge labor force, high unemployment, and low cost of labor. If we would have set up our factory in Bangladesh or Vietnam, and put out a sign, it would have attracted hundreds of employees with years of sewing

experience. That's simply not the case in Ghana. It wasn't a surprise, but it has been a challenge.

Our core business is original equipment manufacturing (OEM). Clients give us their specifications and DTRT develops the product. Then we make it and ship it freight-on-board; clients handle sales and distribution.

In August 2014, the company shipped its first container. Today it employs 2,700 people and has become one of the largest private employers in Ghana, with a workforce that is 98% local.

*We wanted to locate DTRT
where it could be
cost-competitive while
paying wages that lifted
people out of poverty.*

Because Ghana has limited capabilities for fabric production and trim or even shipping cartons, DTRT sources these products from China. The Ghana facility handles product assembly, or what we call CMT, or Cut-Make-Trim.

When DTRT started, we had a very strong relationship with one customer who bought into our vision. The company still faced challenges in getting to profitability and relevance as a business. A high percentage of

employees had never worked before. Increasing productivity has required a significant investment of time and money.

However, DTRT believes Africa is where the industry is moving. Moreover, in Ghana, we can pay wages that are above poverty levels. It's English-speaking, politically stable, and located on the west coast of Africa, which shortens transit times to Europe and the United States.

Because demand from that first customer was so strong, we focused on that company for the first few years, and then added a second customer in 2020. Both are billion-dollar apparel companies and offer tremendous growth opportunities. We're also talking to others to expand the customer base.

Now, the company is looking into bringing a textile mill to Ghana. Vertical expansion would shorten lead times. In addition, the technology uses about 90% less water than traditional mills. We're excited about it and confident that by late 2023 we'll start making that a reality.

Once the mill is built, we hope Ghana will become a more attractive investment destination for other companies, as well. Then, we're not talking about creating 5,000 or 10,000 jobs; we're talking about creating 100,000 jobs. ■

Marc Hansult Answers the Big Questions

1 What is one thing you wish you'd known before you started DTRT?

If we would have anticipated the limitations to available financing, we could have addressed them more proactively.

2 If you could have one super power what would it be?

Aggressiveness. I would have apparel brands be even more aggressive in building a sustainable industry.

3 What's the best supply chain or leadership advice you ever received?

When aligning with partners, keep a long-term perspective and a partnership mindset, rather than a transactional mindset.

4 Do you have a guilty pleasure?

Sports is my passion. I work out and play basketball and tennis.

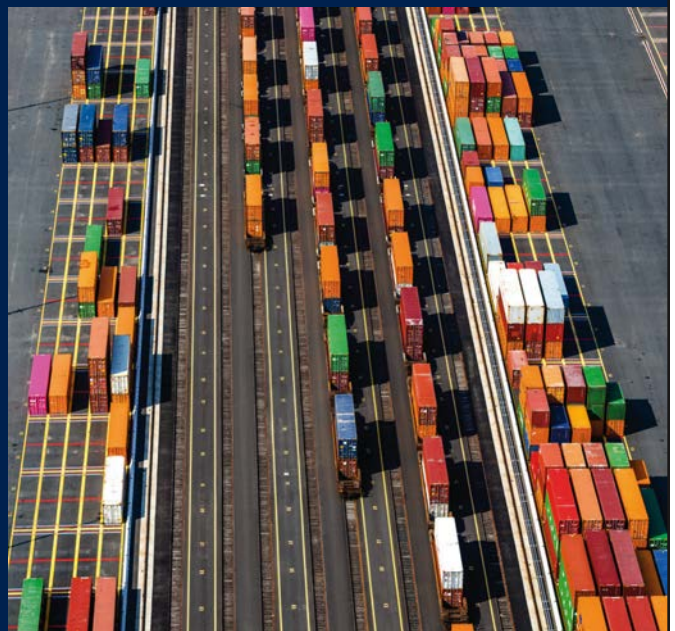


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[IN FOCUS]

NOTED

The Supply Chain in Brief

> GOOD WORKS

Yogurt maker **Yoplait** donated a 53-foot refrigerated trailer to Feeding America West Michigan to help address insufficient infrastructure at the food bank's Cadillac branch. The new truck, which can hold 45,000 pounds of food, allows the food bank to safely deliver cold food products to those in need across the Northwest region of its 40-county service area.



Target donated \$1 million to nonprofits providing free transportation to vaccine sites through Lyft's Universal Vaccine Access campaign. The retailer also donated \$500,000 to support UNICEF's efforts in working with manufacturers on the transportation, logistics, and storage of vaccines in low-income countries.

> SHOVEL READY

Amazon plans to open a 635,000-square-foot distribution facility at the Cascade Industrial Center in Washington state. The five-story building will have a 212,000-square-foot mezzanine and another 494,000 square feet of space on the other floors. The building will house 51 loading docks and a footprint equal to 10 football fields.



Saddle Creek Logistics Services is opening a 544,320-square-foot e-commerce fulfillment center in Walton, Kentucky. The facility is equipped with high ceilings, 110 dock doors, and storage for retail and manufacturing distribution. The center also offers value-added services, returns management, and parcel shipping programs.

m&a

■ **Pilot Freight Services**, a transportation and logistics services provider, acquired **DSI Logistics**, a California-based provider of last-mile delivery for hard-to-handle goods.

■ Supply chain tracking technology provider **FourKites** acquired transportation management provider **Haven**.

■ **Magnate Worldwide** acquired **ASAP Expediting & Logistics**, which specializes in time-sensitive shipments.

■ **Seaboard Transportation Group**, a transporter of bulk petroleum and chemical products, acquired freight trucking company **Armour Transportation Systems**.

■ Freight marketplace **Truckstop.com** acquired **Registry Monitoring Insurance Services**, an automated onboarding and monitoring services provider for the transportation industry.

■ **Accenture** acquired **REPL Group**, a U.K.-based technology consultancy specializing in solutions for supply chain, workforce management, store operations, and retail customer experiences.



> UP THE CHAIN

Logistics real estate firm **Duke Realty** promoted **Susan Bergdoll** to senior vice president of leasing and development and leader of its Chicago, Minneapolis, and Indianapolis markets. Bergdoll joined the company in 1997 and advanced to many roles, most recently as vice president of leasing and development.

Tony Zuazo has been promoted to executive vice president of global supply chain at discount retailer **Dollar General**. Zuazo joined the company in 2010 as senior director of inventory and planning systems and has held positions of increasing authority, most recently serving as senior vice president of inventory and transportation.

> SEALED DEALS

• Argentina-based organic beverage company **CBSé** selected **Dachser Argentina** to manage export logistics for its yerba mate shipments to the Mexican market as global demand for the herbal tea increases. Dachser's global network helps ensure efficient, reliable transport for this high-demand product, and allows CBSé to focus on growing its business globally.



• **DHL** and **Formula 1** extended their global partnership. DHL remains the official logistics partner of Formula 1 and will continue to ship race cars, fuel and oil, equipment for the racing teams, and transmission technology around the world.

• **Northern Refrigerated Transportation** integrated the SmartDrive video-based safety program from **Omnitracs**, an SaaS-based fleet management solutions provider, to its in-cab technology suite. The program enables visibility into each driver's scores, coaches them, and provides results quickly.

> GREEN SEEDS

Nissan Motor plans to use cobalt-free electric vehicle batteries by the mid-2020s, as the rare metal falls into short supply. The automaker aims to reduce the cost of its electric vehicles without affecting the range of the cars on a single charge. By using cobalt-free batteries, Nissan expects to reduce cobalt's composition ratio to about 10% for its Aria electric vehicle, which will be introduced later in 2021.



UPS agreed to purchase 10 electric vertical takeoff and landing (eVTOL) aircraft from Beta Technologies, and will test them in its express delivery network. When an eVTOL aircraft battery's first life cycle ends, it can be reused for the company's 10,000 electric vehicles.

Home furnishings retailer **IKEA** and clothing retailer **H&M** partnered on a large-scale study to address textile recycling obstacles and help retailers shift to a circular economy. Both companies pledge to use only recycled, renewable, or other sustainably sourced materials by 2030.

> RECOGNITION

• The Women In Trucking Association honored **Emma Leonard**, supply chain management executive vice president at Visible, with the



2021 Top Woman To Watch award for fostering growth, helping customers, and mentoring other women leaders. The award recognizes her leadership and what she has achieved while overseeing transportation and procurement.

• Global logistics company C.H. Robinson's transportation management system, **Freightview**, has been recognized as the **FedEx 2021 Compatible Solution of the Year**. The platform was selected for its innovative approach to freight automation and parcel connectivity for small- and mid-sized businesses and e-commerce customers.

• **Peak-Ryzex** received the **Supply Chain Solutions Partner of the Year** award from Ivanti-Wavelink for exceptional performance as a key partner in 2020. The award is based on total revenue for the year, product sales growth, and similar metrics. This is the fifth year in a row Peak-Ryzex has been recognized with the award.

> MILESTONE

Hub Group celebrated its 50th anniversary by ringing the Nasdaq Stock Exchange opening bell. The transportation and logistics company was founded in 1971, and has expanded its capabilities since then to provide end-to-end solutions for customers across various industries, including retail, healthcare, consumer packaged goods, and automotive.

[IN FOCUS]

TAKEAWAYS

Shaping the Future of the Global Supply Chain

Target Practices Faster Fulfillment

Instead of using carriers to ship all its online orders, Target is building its own team of dedicated delivery personnel to get packages to customers' doors even faster, helping the retailer compete with its e-commerce rivals, says a CNBC report.

The new approach involves three

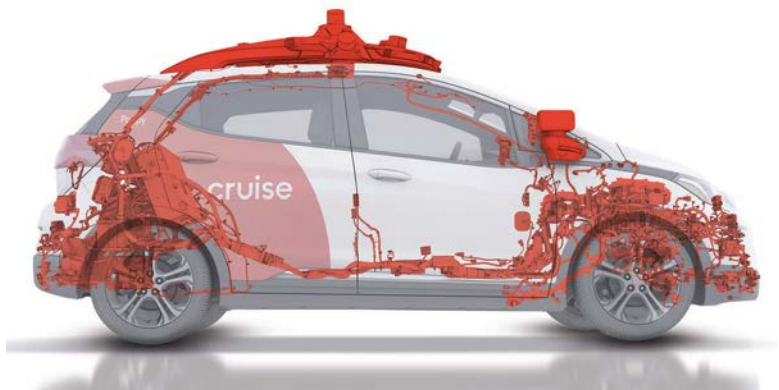


companies that Target acquired: Grand Junction, Deliv, and Shipt. Target employees pick and pack orders at stores, and the items are transferred to a sortation facility multiple times per day. Grand Junction and Deliv's

technology groups packages for the most efficient routes. Shipt then handles same-day delivery.

This strategy also helps Target reduce the number of packages that pile up in its stores, improve the customer experience, and make e-commerce orders more profitable, the report says.

Target plans to open five more sortation centers in dense, urban areas where multiple packages can be delivered to the same neighborhood.



Hailing Robotaxis for Delivery

Cruise, GM's autonomous vehicle arm, was mainly focused on launching an autonomous ridesharing service, but may use its "robotaxis" for delivery services instead. It recently added Walmart as an investor in an extended fundraising round that grew to \$2.75 billion, and had completed a delivery pilot with DoorDash in San Francisco even before the pandemic.

Once the pandemic hit North America, Cruise stopped the meter on its robotaxi testing and began delivering prepared meals for food banks. In November 2020, Walmart and Cruise also announced plans to test grocery delivery in Scottsdale, Arizona. Under the pilot program, consumers place an order with their local Walmart and have it delivered via Cruise's Chevy Bolt electric vehicles. The vehicles operate autonomously, but a human safety operator is behind the wheel.

Walmart has partnered with other autonomous vehicle developers, including Waymo, to test using the technology on a commercial scale. The retailer signed a deal with startup Udelv to test the use of autonomous vans to deliver online grocery orders to customers, and autonomous delivery startup Nuro launched a pilot program with Walmart in Houston in 2020.



BRACING FOR BREXIT

C-level executives responding to a survey from technology company Avetta expect Brexit to have the biggest impact on supply chain resiliency in the near term and in the future. Findings in the survey reveal:

Legislation. Half of respondents expect Brexit to impact legislative changes, with nearly

one-third anticipating changes in administrative processes. Only 5% see an impact on engaging temporary staff and keeping sustainability, environmental, and social value commitments.

Staffing needs. Executives are optimistic about Britain's future: only 11% say they've had to strengthen their team to manage the changes. About 25% say Brexit will impact hiring and flexible staffing needs in

2021, and 39% expect it to affect their hiring strategy for EU workers.

Preparations. Executives should prepare for the impact of supply chain disruptions, understand legislation affecting corporate waste management and recycling, take a proactive approach to procurement and long-term sustainability, develop a talent pipeline, and understand restrictions to free movement in the European Union.

Amazon Delivery Drivers, Assemble!

Amazon shoppers may soon have the option to have their orders assembled upon arrival, says a Bloomberg report. The e-commerce giant is testing the premium service as online furniture and housewares sales continue to soar and shoppers get more comfortable making big-ticket purchases online.

Amazon currently offers scheduled at-home delivery to a particular room, but consumers are often disappointed when their items arrive unassembled in large boxes. The new service is designed to be more convenient, cheaper, and easier for Amazon to manage. It also helps the company compete with retailers like Wayfair and Home Depot, which already offer in-home assembly, the report says.

The retailer may have to address driver issues such as adequate training and demanding job completion



times, as obstacles such as cluttered homes and narrow stairways could significantly lengthen deliveries, Bloomberg says.

The new service requires drivers to unpack and assemble the items, remove the packaging, and take the item back on the spot if consumers aren't satisfied. Previously, consumers had to schedule an outside contractor to come to their home at a different time to assemble the product—if the service was even offered in their location.

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TAKEAWAYS

SUPPLIER INFORMATION STILL A CONCERN

The pandemic revealed widespread problems with supplier information on a global scale. While many procurement leaders responding to the 2021 Supplier Information Study, commissioned by Tealbook, had initially vowed to invest in supply chain resiliency, almost a year after the pandemic they still grapple with issues surrounding poor supplier information:

Agility: Nearly all respondents agree that, in the long run, being agile is more important to the bottom line than cost savings. This means taking steps to address their top concerns (see chart), which are varied and important to every aspect of their business.

Innovation: 92% of respondents are at least “somewhat concerned” their company is not in a position to leverage supplier innovation.

Data: About 91% cite multiple concerns stemming from a lack of high-quality supplier data, including compromising the integrity of IT solutions and falling behind the competition.



Suppliers Play Catch-Up

While orders are up significantly, indicating healthy progress toward recovery, 20% of suppliers are struggling to meet increased demand, says Tradeshift’s latest Index of Global Trade Health. The report reveals:

- Global business-to-business transactions grew 10.2% in Q1 2021, suggesting trade activity is settling into a fast pace.
- Trade activity in the Eurozone grew 14.5%, driven by surging orders across the region’s manufacturing hubs.
- U.S. transaction volumes, which were surging in Q4 2020, fell back in line with global averages. Trade activity rose 10.5% in Q1.
- Transaction volumes in the U.K. rose to pre-pandemic levels in Q1, but are still below the global average.
- Chinese New Year celebrations significantly impacted trade activity in China. Transaction volumes dropped 21% in Q1 after making significant gains during the second half of 2020.
- Manufacturing transaction volumes show signs of a bullwhip effect. Order volumes were up 80% year on year in March, while invoice volumes were up by just 21% in the same period.
- Global transaction volumes show signs of a continued gap between order volumes and invoice settlements. One in five suppliers say they’re struggling to cope with increased demand.
- One-third of suppliers say their cash-flow position has deteriorated in the past six months. Nearly half say the number of late customer payments has increased since the beginning of 2021.

SOURCE: TEALBOOK

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DISCOVER THE WSI DIFFERENCE

Analyzing Congestion at U.S. Ports

The COVID-19 pandemic, increased spending, shipping delays, and how companies are responding to the crisis.

Current Port Conditions

The maritime shipping industry comprises approximately 90% of the global supply chain and any operational disruptions have significant effects on the entire ecosystem. Congestion at the ports, especially in southern California, has steadily increased. While shipping traditionally took 20-30 days, it is now closer to 60-75 days with a cost increase of up to ten times pre-pandemic rates. Ships waiting at anchor have increased 129% with nearly triple YoY waiting at anchor in Q1 2021. Delays are a result of massive volume increases. In February, Long Beach broke a record with a 43.3% increase in TEU YoY. The ongoing challenges and disruptions from heavy port congestion is largely a result of increased consumer spending behavior, COVID-19 induced labor shortages, and an infrastructure that is unable to handle the heavy volume that has driven up costs and caused companies to re-evaluate the efficacy of their current supply chain solutions.

The beginning of the pandemic initially negatively impacted commerce, but it has since witnessed huge surges. The increased time at home, both for work and leisure, has shifted consumer spending behavior to purchases of goods rather than travel and services. January started strong for companies with \$500 billion spent and there is an expectation that overall consumer sales will grow 6.7% YoY in 2021. Increased sales and growth signal a continued, steady increase in volume through the ports.

COVID-19 has created significant labor shortages, both at port and on ships. Inability to take shore leave and see family has created a shortage of workers willing to spend extended periods at sea. Additionally, the current labor allotment in the ports of Los Angeles and Long Beach is 4 work gangs per ship, a sharp decline when container ships

normally have up to 7 work gangs assigned. Of the 15,000 members of the International Longshore and Warehouse Union, 800 are out of work due to the pandemic. With only 5% of the workforce vaccinated at the beginning of March, the timeline for a return to normality is uncertain. Officials are pressuring the Biden administration to prioritize maritime workers in the vaccine rollout plan.

Ports only experienced a 2.37% increase in TEU volume YoY in 2020. The remainder of the supply chain was operating smoothly and therefore no issues related to port congestion arose. The increase in consumer demand and resulting volume of goods has created chassis shortages and scarce warehouse and distribution center space.

The Solution

Given the extended delays and uncertainty, companies are examining alternative solutions to maritime shipping, such as reshoring and air freight. For example, in late 2020, after nearly doubling their subscriber rate YoY, Peloton purchased Precor, a U.S. based

gym-manufacturer. The purchase allows them to curb the delayed shipments and limited inventory that otherwise negatively affects both sales and brand image. Air freight was prohibitively expensive pre-pandemic, but as airlines have shifted focus from passenger travel to cargo, it is now a more viable option. A shipper sending a 250 kg shipment from Asia to the U.S. now pays 40% less on average. Furthermore, expansion projects at facilities are expected to provide relief with the Los Angeles and Long Beach port expansion project set to be completed in 2021. The project will increase their capacity by 1 million TEU, with the total capacity at 3.4 million TEU/year.

The COVID-19 pandemic has unequivocally changed the world and clearly created a crucial pivot in the supply chain. Companies can no longer focus on a single shipping solution, but rather must diversify their operations to better safeguard against future crises that could negatively affect the supply chain. It's vital that the logistics industry recognize this shift and adapt practices accordingly to remain competitive in this ever-changing environment.

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From switching to energy-efficient lighting to installing solar panels, here are some tips to help you build a greener warehouse.

The impact of climate change on the global supply chain continues to grow—2020 was marked by uncontrollable global wildfires and destructive storms. It's essential that logistics operators pursue efforts to operate more sustainably. Here are some tips to help you get started on building a greener warehouse.

Tip #1: Install Energy-Efficient Lighting

Traditional HID warehouse lighting draws a lot of power, driving up costs and wasting energy. Switching to energy-efficient lighting is both eco-friendly and budget friendly. LED lighting in the warehouse can reduce energy consumption from lighting by as much as 75% and save thousands annually in energy and maintenance costs.

Most utility providers offer rebates or incentives for incorporating energy-efficient lighting into commercial and industrial buildings. Also, adding motion-activated lighting will ensure the lights turn off when employees have gone home.

Tip #2: Improve Internal Climate Control

HVAC systems can often be a big source of energy waste for an industrial building. These systems often work overtime to maintain a preset internal temperature. Here are some practices you can incorporate to alleviate strain on your HVAC system and reduce its energy usage:

- **Keep the doors closed.** Propping doors open in the summer will reduce the effectiveness of your building's air conditioning equipment. Conversely, propping doors open in the winter will force your heating system to work harder. Keep doors closed.
- **Use air curtains.** In scenarios where doors must remain open, install an air curtain. Air curtains blow air rapidly across the opening, preventing internal/external air exchange. These tools can also minimize temperature loss from temperature-controlled areas.
- **Use strip curtains.** Plastic strip curtains serve a similar purpose to air curtains. These PVC strips

hang from openings to minimize airflow between two areas while allowing people and equipment to pass.

- **Check dock door seals.** Make sure your loading dock doors seal properly to avoid losing controlled air from your facility. Consider installing dock shelters to maintain better environmental control.
- **Use better insulation.** Though more expensive upfront, replacing old insulation in your building envelope with spray foam insulation will pay for itself over time by reducing heating and cooling costs.
- **Temperature sensors.** Employing temperature sensors and automated HVAC controls will allow your HVAC system to automatically optimize your facility's temperature.

Tip #3: Add Solar Panels

That big, flat roof on your warehouse is an ideal mounting surface for solar panels. The upfront cost of solar panel installation can be daunting for many warehouse owners, but the long-term benefits will ultimately outweigh the initial expense. You should break even on your solar installation in about eight years, while the average lifespan of a solar panel is well beyond that at about 25-30 years.

Many utility providers will provide incentives for reducing your building's reliance on the power grid during peak usage periods. With a proper battery system and controls in place, you can virtually eliminate demand charges and significantly decrease your utility bill.

Logistics providers and other warehouse operators can do our part by incorporating eco-friendly processes into our facilities. Following these tips will help you get started.

About Phoenix Logistics

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Maximizing Unused Vertical Space with a Vertical Lift and Mezzanine is the Key to Better Productivity and Safety



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customindprod.com

Efficiency starts with an organized and free flowing work area. A Mezzanine and Vertical Reciprocating Conveyor (VRC) might be the perfect place to start.

Today, companies need to be as efficient as they can be. Whether it's the speed at which orders are turned, cutting production costs, or adding new equipment to improve productivity, companies need to be lean and mean to compete.

In most cases, any of the above could be hindered by floor space constraints. After all, one cannot add new equipment if there is no room to do so. One cannot improve productivity if workers are processing orders while running an obstacle course of boxes and equipment on the warehouse floor.

Historically, to address these problems, business owners would hire a construction crew to expand their facilities. This can prove to be a costly and time-consuming endeavor.

A better and more cost-effective alternative—in many cases—is simply to go up with a Vertical Lift and Mezzanine.

So, what is a Vertical Lift and Mezzanine?

Mezzanines

A Mezzanine is an intermediate floor in a building that is partly open to the double-height ceilinged floor below, or which does not extend over the whole floor space of a building. A Mezzanine provides space for storage or production, which frees up working floor space down below.

In some cases, a Mezzanine can more than double the available floor space. Freeing up available workspace allows for more staff, production lines, machinery, etc.—thus, improving productivity.

Vertical Reciprocating Conveyor (VRC) Lift

Vertical Reciprocating Conveyors are a classification of Material Lift and are a perfect complement to a Mezzanine.

VRCs are used to move products and other goods from one level to another. They provide an efficient, convenient, and safe way to transfer materials to and

from mezzanines, basements, and between levels in multiple story buildings.

How Does a VRC and Mezzanine Improve Productivity and Safety?

A VRC takes things to the next level, literally. A VRC improves productivity by saving employee energy from manually moving materials to different levels, in greater bulk and much faster.

I think the Center for Construction Research and Training puts it best: "Productivity drops and schedules get delayed when workers must wait for materials to be delivered or spend time and energy locating and manually lifting and carrying materials around a job site."

VRC Lifts also improve safety by eliminating situations that can lead to a potential injury. Studies tell us that 20% of all workplace injuries are caused by slips, trips, or falls. Sixty percent of elevated falls are from heights of less than 10 feet, such as from stairs or ramps. The average cost of a VRC Lift is less than the average cost per injury incident

In Closing

As stated earlier, so much of success today is based on an efficient operation that results in productivity. Efficiency starts with an organized and free flowing work area. A Mezzanine and Vertical Reciprocating Conveyor (VRC) might be the perfect place to start making your operation as efficient and productive as possible.

To learn more, feel free to contact our Solutions Specialists at 321-728-3355.





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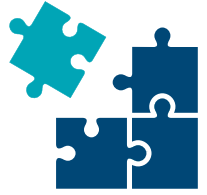
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Supply Chain Challenge?

SOLVED



Global Manufacturer Gains Visibility and Control Over Inbound Freight

Deploying the RateLinx Supplier Portal and its transportation management system, water solutions company Pentair gained transparency, visibility, and control over its entire freight spend.

Monitoring carrier compliance, freight costs, and visibility to inbound freight is essential for many shippers. When these functions are done manually, overhead costs and the potential for human error are high. Pentair, a global manufacturer of water solutions and thermal management products, knew this problem all too well.

THE CHALLENGE

Pentair always struggled to get control of their freight, but the inbound side had big gaps. Their policy consisted of distributing routing guides and maps to the supplier's sales rep, CSR, or general mailbox hoping the information would make it to the shipping department.

When it came to monitoring compliance, the only way they could tell if a supplier followed the routing instructions was to either scan the invoices looking for an invoice from a non-approved carrier or a sky-high rate.

"While this manual, archaic process did catch many high-priced shipments, it would fail to catch shipments where a supplier used a \$355 approved carrier vs. the \$300 approved carrier they should have used," said Mike Pahlman, global logistics manager for Pentair.

Furthermore, having highly manual processes meant there was a significant lack of data, reporting, and insights available. Pentair desperately needed visibility to view cost trends, carrier compliance, and ETAs at the carrier



and lane level. Without quality data and reports, Pentair was unable to glean any usable insights from its transportation network.

THE SOLUTION

In December 2020, Pentair rolled out the RateLinx Inbound Supplier Portal to their domestic suppliers. In just the first three months since adding the supplier portal module, Pentair has saved a substantial amount of money and is on target to save even more in the reduction of incorrect routings. Pahlman said one of the benefits of working with RateLinx is the ease of adding new carriers, pricing and swapping preferred carriers.

He adds that having the ability to add routing exceptions has also made a big difference.

"For example, adding an exception that because carrier ABC won't pick

up at supplier XYZ, they need to be removed from the routing option for that supplier," he notes.

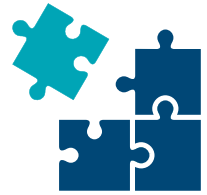
RateLinx's fast implementation enabled Pentair to quickly access reports to show each shipment, the preferred carrier and rate, the actual carrier and rate used, and any variances.

By integrating their new supplier portal with the ShipLinx TMS from RateLinx, Pentair was able to leverage Prescriptive InsightsSM to make proactive improvements to service and cost about statistical outliers. Prescriptive InsightsSM delivers easy-to-understand recommendations to improve performance and can be customized to take actions automatically.

The RateLinx solutions delivered a quick ROI, automated manual processes, and enabled the development of new procedures that could be sustainable as the business grows. Pentair now has something the company has never had before: 100% transparency, visibility, and control over their entire freight spend and a data/technology partner with the tools to give them a competitive advantage.

RateLinx

To learn more:
email: hello@ratelinx.com
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web: ratelinx.com



Supply Chain Challenge?
SOLVED

Auto Supplier Turns to Hub Group for Strategic Overhaul

Encompassing drayage, transload, and expedited OTR solutions, Hub Group’s comprehensive capabilities helped a leading auto supplier gain back control over its import network and key relationships.

THE CHALLENGE

A leading supplier in the global automotive industry faced a concerning scenario that could dramatically impact its business. The company utilized three well-known freight forwarders in the Los Angeles market, but all three faced considerable challenges including tight capacity at the ports, severe port congestion, and numerous communication breakdowns. And to make matters worse, all of these issues compromised the company’s rapport with its OEM line. These serious conditions prompted the company to turn to Hub Group—and fortunately, it was just in the nick of time.

THE SOLUTION

After a network analysis, Hub Group began to execute a strategic solution in just 48 hours after being awarded the opportunity. By deploying our asset-backed network and deep chassis pool, Hub Group implemented a drayage solution that involved a two-shift operation—giving the customer access to a fleet of dedicated drivers and pre-procured capacity to support customer surges. A critical leg to an end-to-end solution, this set the cadence and positioning of our transload and over-the-road (OTR) solution to be successful.

Next, Hub Group flexed transloading capacity in the market to provide a quick alternative to shipping intact containers to end locations. This program not



only avoided the excess cost of holding onto a steamship container, but it also maximized cubage by combining up to two 40-ft. containers into a single 53-ft. trailer while still hitting on-time expectations. This helped the customer maximize freight-per-truck for inbound orders while avoiding costly capacity going deep in its network.

Lastly, realizing this one point of contact was an opportunity to enhance the customer’s visibility and communication, Hub Group’s dedicated Account Management team replaced multiple communication channels with our streamlined, proprietary logistics technology, *Hub Connect*.

With this tool, the customer could monitor capacity commitments from any carrier with access to essential shipping updates and a standardized freight payment method. This eliminated chaos and moved to proactive reporting, problem-solving, and planning. Our technology also enhanced visibility to give the customer confidence in Hub Group’s control over its supply chain.

THE RESULT

In the face of overwhelming port challenges, Hub Group delivered comprehensive, strategic options—helping the customer gain back control over its import network and key relationships. Our International Drayage solutions replaced the previous framework with drayage, transload, and expedited outbound OTR solutions, including a commitment to more than 100 containers a month with 24/7 communication to the company’s team. This overhaul revived the company’s rapport with its OEM line and positioned its supply chain for sustainable success.

In addition, Hub Group positioned the company for long-term growth with optimized import processes including international ocean moves, inbound diversions, and international inland drayage growth with containers delivering to the customer’s DCs. Finally, Hub Group was also nominated as the single-source provider to deliver drayage, transload, and OTR capabilities for all of the U.S. and Canadian gateways—offering a uniform service level in each corridor.

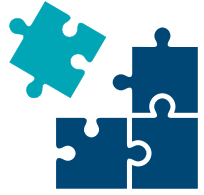
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Supply Chain Challenge?

SOLVED



Robotics Deployment Increases 3PL's Productivity from Day 1

Locus Robotics deployed autonomous mobile robots along with reporting tools and dashboards for Taylored Services. The scalable solution brought immediate productivity gains.

THE CHALLENGE

Simple AMR integration and deployment leads to increased productivity from day 1

Taylored Services provides warehousing, fulfillment, and distribution services to its customers. As an omnichannel, end-to-end solution, clients are high-demand and require products to arrive on time and in full.

The team at Taylored Services stays ahead of the competition by leveraging technology to grow the business and help clients advance through efficiency and better utilization of resources.

To improve fulfillment, they sought technology that's scalable, shortens lead times, and improves the quality of service. "We're always looking for a better way to do things. Our culture is continuous improvement," says Tom McCormack, chief information officer.

The team evaluated many solutions and chose Locus Robotics because the robots are easy to use, the technology is created to efficiently deploy orders, and the integration is simple.

Brian Southwell, VP, business development & marketing, shares that the Locus solution will allow the facility to "leverage our current employee base to get much more product out the door."



THE SOLUTION

Process improvements are just the beginning

Locus deployed autonomous mobile robots along with a suite of actionable reporting tools and dashboards. This installation included a systems integration with the WMS and network, a solution design of the facility and workflow, and the physical implementation of the robots including navigation and pick testing.

"Locus made it an easy transition," said McCormack about the transition in picking, replacing manual processes using handheld RF devices with collaborative LocusBots.

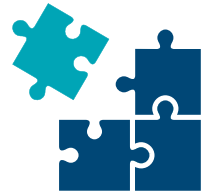
Picking associates are excited about the new solution. Anthony Smith, lead

associate, said, "Picking to LocusBots is a little easier because you don't have to do so much walking. You can simply stand in a couple aisles and the robots come to you, you pick and then the robots go to the packing area."

The team is enthusiastic about getting ahead of challenges and further expanding into reverse logistics to bring more value to their clients.



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Supply Chain Challenge? **SOLVED**

Streamlining Freight Bill Audit and Payment Processes

Allowing transparent, flawless communication between its transportation management system and its clients' account payable systems, AR Traffic Consultants helps increase efficiency and lower freight costs.

THE CHALLENGE

AR Traffic Consultants prides itself on identifying problems and providing viable solutions. Several ARTC clients faced the same challenge when using non-standard carrier codes for various classifications instead of identifying the carriers with SCACs (Standard Carrier Alpha Codes). One client had to match the vendor files in their A/P system, which requires numbers. Other clients wanted to show multiple rates for the same carrier (standard service, guaranteed delivery, mix of pallet and discounted LTL rates).

Using *CalcRate*, ARTC's transportation management system, they were able to manually match, audit, and pay invoices. However, they encountered complications when changing to EDI 210 transmissions to eliminate manual data entry.

The clients who showed multiple services would take a SCAC and alter it. Suppose a carrier's SCAC was XXXX. They would use XXXX for standard service. However, they may use XXXP for pallet rates, XXGA for guaranteed AM delivery or XXGP for guaranteed PM delivery, etc. This facilitated the process for customer service reps with limited logistics experience and simplified internal G/L coding to assess transportation costs and revenue.

EDI transmissions link to carriers' SCACs and all carrier invoices are received as a batch. The invoices,



however, are linked by carrier code, PRO number, and BOL number (if provided by the carrier) in *CalcRate* before transmitting to the A/P system. For these TMS users, the shipments not designated by carriers' SCACs, the invoices did not match the data in the accrual file. This greatly increased the auditors' work. One frustrated client asked us to stop sending EDI. They found manual input entry easier despite being so labor-intensive.

THE SOLUTION

ARTC was totally unaware of this issue until our client requested the cessation of EDI transmissions. When available, EDI is always the first choice. It speeds entry of invoice information to the system and eliminates erroneous information, which corrupts data.

We strongly urged our client to temporarily pause the EDI transmissions and allow us to develop a solution. Returning to the same manual system would be counterproductive. ARTC's system matches data by a combination of carrier code (SCAC), BOL number, and PRO number. Optimally, both the BOL and PRO numbers are in the accrual file and the EDI transmission. Problems arise when the BOL number

is not transmitted or the PRO number not entered in the accrual file at the time of shipping.

ARTC was able to achieve high match rates by searching the accrual file based on BOL and PRO numbers provided by the carrier without the SCAC. Additional layers of search were built in for the unmatched invoices to improve the match rate. This lowered the rate of unmatched invoices to less than 1%.

Our client reinstated EDI transmissions and greatly streamlined freight bill audit and payment processes. Using the same methodology, AR Traffic Consultants provided high match rates for other clients who experienced similar challenges, allowing transparent, flawless communication between ARTC's *CalcRate* and A/P systems.

AR Traffic Consultants is committed to lowering freight costs and providing the right tools to keep business moving forward. We have the expertise, experience, and a track record of more than 50 years, providing the most advanced transportation logistics software and logistics services in the industry.



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To learn more:
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[INSIGHT]

IT MATTERS

by *Lindsey Shellman*

Chief Commercial Officer, WIN

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Technology Must Be a Theme in 2021

The supply chain sector has always been one of tradition. Unfortunately, that has often meant that it has been slow to adopt the technology evolving around it. With a fear of the unknown, the supply chain and logistics sector has stuck to the status quo for too long, slowing the ability to evolve and reach true potential.

Over the past five years, technology has finally begun to seep into the industry and 2020 changed the way we think. As companies closed for prolonged periods and workflows became remote, technology proved critical to survival.

As more companies involved in supply chain adopt technology out of necessity, it is hard to see them ever turning back. Technology continues to be viewed as beneficial, driving the industry to evolve and flourish.

THE FEAR OF THE UNKNOWN

For an industry that has spent decades conducting business in the same way, adopting technology can be frightening because it is the unknown.

This fear and the simple lack of training in new technology are the biggest hindrances in supply chain technology adoption. Ten years ago, companies were hesitant to adopt cloud-based technologies—a hesitation that is still present today. This leads to an unwillingness to consider new solutions, and ultimately many people being

unprepared when the time comes to adopt technology into workflows.

The supply chain and logistics sector is historically focused on personal relationships. Many fear that if they adopt new technology solutions, they could have a hand in putting those players they've built relationships with out of business.

In truth, technology adoption does not take the jobs away, it simply makes them more efficient. It improves labor management, enables easier monitoring of resources and creates full visibility across the supply chain.

The events of 2020 posed a great challenge to the supply chain. As companies closed offices and remote work began, the technological gap was more obvious and industry leaders realized they needed to do something about it.

Technological innovation began with the less-than-truckload market, and we now see a strong push on the full-truckload side. It does not stop there.

Within the next few years, that trend will continue throughout additional

modes and equipment types. Artificial intelligence (AI) and machine learning (ML) are being introduced into processes, presenting exciting opportunities to reduce costs and increase efficiency.

AI and ML are both dependent on good data. With the introduction and spread of technology, AI and ML teams are getting better access to the depth and quality of data they need to succeed. This will play a large role in the success of the industry moving forward.

THE FUTURE IS BRIGHT

The technological revolution for supply chain and logistics is upon us. Technology will allow greater connectivity and efficiencies that are invaluable. By adopting technology, the use of data analytics, AI and ML, logistics companies will be able to better determine patterns and trends throughout shipments. In effect, recurring challenges can be easily identified and quickly solved.

Additionally, as demand for goods continues to grow through the popularity of e-commerce, supply chains must adapt. Technology will allow for smoother, faster travel times and help meet high consumer demands.

It is more important than ever that the industry take a confident step forward and begin utilizing technology solutions that will better set up the entire ecosystem for long-term success. ■



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[INSIGHT]

SUPPLYCHAINVISIBILITY

by *Hannah Testani*

CEO, Intelligent Audit

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Getting a Grasp on Transport Spend

Shipping has been inexorably changed in light of COVID-19. Changes that have been slowly building for a decade are being infinitely compounded as consumers shift to e-commerce versus standard brick-and-mortar shopping. With demand for direct-to-consumer business increasing, delivering shipments to consumers quickly, at the cheapest cost, is now a necessity for companies.

Now more than ever, it is imperative that shippers get a grasp on transportation spend. As carrier networks exceed the unforeseen demand that strains their systems, shippers need to quickly adapt and redesign their networks.

Whether it is carriers not having the capacity to manage shippers' growing volumes, new tariffs, or geopolitical issues, continuous change is the new normal. The days of managing network redesigns using spreadsheets that can take weeks to finish are long gone. Shippers need to optimize transportation spend in real time and make changes on the fly.

With the right software and the mentality that optimization is essential, gaining these network efficiencies will be a triple win, enabling shippers to deliver shipments to their consumers faster, at lower cost and with fewer exceptions.

The next frontier in supply chain visibility entails leveraging powerful analytical tools and algorithms to create maximum efficiency, and help shippers adapt to a constantly changing

environment. It is vital for shippers to have access to both predictive and prescriptive analytics—on demand and in real time.

The surcharges imposed by national carriers throughout COVID have increased steadily and we have no idea when—if ever—these surcharges will subside. These costs have a huge impact on a shipper's bottom line and it is clear that the national carriers are trying to price these types of shipments out of going through their networks.

THE VISIBILITY CHALLENGE

The traditional supply chain process is ill-equipped to deal with the complexity and increased shipping expectations that have arisen in the past decade. This challenge becomes more glaring as retailers continue to diversify channels to e-commerce from brick-and-mortar, or a hybrid of the two. Returns compound the visibility challenge further.

For organizations with the largest footprints, the lack of knowledge and


control over their transport spend is even more pronounced. With widespread infrastructure, diverse stakeholders, and high shipping volumes, companies cannot afford to be blind to their logistics networks.

Companies must optimize their distribution channels and provide the greatest benefits to their customers: same-day, next-day, and two-day shipping. When deciding which service to use, shippers need full visibility into their entire network to find opportunities where they can optimize transportation or reconfigure their footprint for greater efficiency.

Historically, retailers had to use 2-day or next-day express shipments to deliver competitively against Amazon's next-day shipping model. Leveraging stores allows shippers to downgrade their service utilization to ground and still achieve a one-day transit time.

It is also important to continuously monitor service utilization and understand when shipments are going out by air and where ground is cheaper or will be delivered in the same amount of time. As national carriers quickly expand their networks to support current demands, they expedite the delivery of some shipments in their network.

As increased costs, uncertainty, and changes in expectations continue to impact shipping, shippers must understand all the available options. ■




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 **SaddleCreek**
LOGISTICS SERVICES



A surge in online purchasing created by the pandemic resulted in Gap Inc. hiring 1,400 new employees for the 2020 holiday season at its Fishkill, New York, distribution center.

E-COMMERCE FULFILLMENT:

DC STRATEGIES FOR RIDING THE SURGE

THE PANDEMIC TURNED TRADITIONAL ASSUMPTIONS ABOUT DEMAND FOR A WHOLE RANGE OF PRODUCTS ON THEIR HEADS. IN THESE VOLATILE TIMES, HOW DID SMART FULFILLMENT OPERATIONS KEEP UP?

BY MERRILL DOUGLAS

A disaster in countless ways, COVID-19 has nevertheless been a boon for e-commerce.

Consumers spent 44% more money online with U.S. retailers in 2020 than they did in 2019, according to Digital Commerce 360.

The e-commerce spike had several causes. Early in the pandemic, many stores deemed “non-essential” shut their doors, pushing consumers online. But even when stores were open, fear of infection prompted many shoppers to order from home, choosing delivery or curbside pickup.

And while shutdowns suppressed the need for some products—evening wear, luggage, party supplies—it boosted demand for others, such as leisure wear and work-from-home electronics.

Unprecedented demand patterns forced e-commerce merchants to adjust fast. Here’s how fulfillment operations in five vertical categories met the challenge.

BIOMEDICAL PRODUCTS: URGENT NEED

Companies that sell biomedical devices and supplies saw demand soar during the pandemic. Among those companies is a major supplier that uses warehouse technology from Los Angeles-based Rufus Labs in its e-commerce and wholesale fulfillment.

“They sell all sorts of equipment online, from ventilators to syringes to personal protective equipment (PPE),” says Gabe Grifoni, co-founder and CEO of Rufus Labs.

The company also sells COVID-19 tests. As orders poured in, the vendor had to fill them while observing social distancing protocols. It couldn’t simply crowd in more associates.

Rufus Labs’ technology provided several advantages that helped the supplier keep up with surging orders. For one, having switched from handheld scanners to Rufus’ wearable technology before the pandemic, the company



An employee of Saddle Creek Logistics works on e-commerce fulfillment for a customer that sells beauty products by subscription and also through one-off ordering.

had already increased its picking pace. “Switching to wearables provides a 30% boost in pick speed just by not having to pick up devices and put them down,” Grifoni says.

To prevent infection, the company bought more wearables, so pickers had their own devices rather than sharing with workers on other shifts.

Rufus Labs also increased efficiency with a function that lets associates use their wearables to record activities other than picking, such as breaking down boxes or cleaning. Workers no longer need to spend 15 minutes at the end of a shift reporting those activities to a supervisor in person.

“The pandemic accelerated the need for rethinking that process, because everything had to change—who was in the warehouse at what time, or who can go into whose office,” Grifoni says.

The pandemic also prompted Rufus Labs to add a new safety feature. “We built proximity alerts into our platform to let workers know when they’re

within six feet of each other,” Grifoni says.

Post-pandemic, warehouse operators could find that feature useful in other ways—for example, for averting collisions between people and robots.

BEAUTY PRODUCTS: LOOK GOOD, FEEL GOOD

As COVID-19 sent office workers home, canceled night life, and hid faces behind masks, you might have expected demand for beauty products to wither.

But that wasn’t the case for one online merchant that sells cosmetics by subscription and through e-commerce sales.

From mid-March through late July 2020, this company saw online subscription sales grow by 60% month over month, says Nicole Lee, director of fulfillment at Saddle Creek Logistics Services in Lakeland, Florida, which manages that company’s fulfillment from two U.S. locations. Regular e-commerce orders increased too.

The subscription business probably spiked



Wearable technology from Rufus Labs allow workers to pick up to 30% faster, speeding e-commerce fulfillment time.



Products such as this automated vertical carousel from Kardex are suited for goods with a high picking frequency and for frequently accessed similarly sized goods.

because consumers enjoy getting regular shipments of personalized beauty products. “It makes people feel good and gives them something to look forward to,” says Lee. “When there’s a crisis, that’s important.”

As the beauty company’s fulfillment partner, Saddle Creek’s facilities had to get more orders out the door while observing safety protocols and contending with a tight warehouse labor market.

“Fortunately, we had built in capacity that allowed us to scale more quickly,” Lee says. “It also helped that we were early adopters of safety measures and focused on creating a culture where associates felt safe and supported coming to work. We were flexible with shift requirements and spread some of the work over a longer time frame.”

A close partnership with the cosmetics client also helped. “Even before the pandemic, we were on the same page with forecasting, understanding

their customers’ behaviors and where the business was going,” Lee says. “That alignment helped us to make quick decisions and be responsive when sales volume exploded.”

Swedish beauty retailer Kicks has been using a color-coded automated picking system from Swiss company Kardex Remstar to increase picking capacity for both its retail stores and its large e-commerce business. Kardex Remstar’s U.S. operation, based in Westbrook, Maine, recently brought the system, including the Megamat RS vertical carousel module, to the United States.

The system lets several pickers work in the same aisle at once, each pushing a cart that is coded with a different color. “As they move through the aisle, the vertical carousel indicates where they have red picks, green picks and blue picks,” says Douglas Card, director

of systems and integrator sales at Kardex Remstar. Each associate picks items that appear on racks displaying their color.

“When the operation is not that busy, it can run that same system with a single operator and a single cart,” Card says. “As it gets busy, it can introduce a second, third, or fourth cart, all color-directed.” That lets the fulfillment center match workforce to orders as volume fluctuates over time.

APPAREL: AUTOMATION, MICROFULFILLMENT & FORECASTS

With stores closed and dress-up occasions on hold, nimble apparel retailers made two big changes in response to COVID: They refocused their product lines on more casual styles, and they put more resources into e-commerce.

“Those that had already been prepared with a strong

e-commerce channel were able to manage some of the disruption a little better,” says Kim Baudry, global market development director for apparel at supply chain automation company Dematic.

Some of Dematic’s apparel industry customers have started to operate omnichannel fulfillment centers, rather than run store fulfillment and e-commerce from separate facilities.

“They’re using the same inventory to service their stores and their e-commerce customers, which cuts down inventory carrying costs,” Baudry says.

But those two kinds of fulfillment need different automated material handling systems. “Software is important to balance inventory and orders across the different subsystems we use in the building,” she says.



The Dematic Pouch System uses pouches and hooks, each carrying a single item, suspended from rolling adapters that move along ceiling-suspended rails. The system can store, transport, sort, and sequence items in support of e-commerce and omnichannel order fulfillment.

Also, some apparel companies have opened smaller facilities—micro-fulfillment centers—in urban areas, speeding fulfillment by getting product closer to customers, Baudry says.

To help meet the challenge of increased e-commerce demand, Gap Inc. recently opened a highly automated, 850,000-square-foot facility in Longview, Texas, that will initially fill orders for its Old Navy brand. The facility incorporates technology such as a robotic sorting system and automated baggers that the company previously tested at other facilities.

Thinx, a New York-based brand that sells fabric undergarments for menstrual and bladder leak protection, has seen a big jump in demand in the past year, especially online. The general shift to e-commerce is one reason for this growth, says Nathan Fox, the company's senior vice president, finance and operations.

Social distancing also might have given the product a boost. "Our product is something we think customers are more willing to try from the safety of their couch in a work-from-home environment," Fox says.

As e-commerce demand accelerated steeply, Thinx brought in more inventory and worked with its service partner, Ruby Has Fulfillment, to build more capacity.

"As best we can, we've tried to give Ruby Has accurate forecasts, so they

can plan their staffing and space," Fox says.

Because it works closely with customers such as Thinx to anticipate projected sales, Ruby Has can allocate resources to match growing demand, says Esther Kestenbaum Prozan, president at Ruby Has, which is based in Bay Shore, New York.

To generate forecasts during a time when historical data doesn't really apply, Thinx closely watches how its marketing campaigns, special promotions, and new product introductions translate into sales.

Besides responding to customers' projected needs, Ruby Has serves as a consultant. "We can bring to bear not only what you'd think of as fulfillment solutions, but also suggestions about various technology integrations and other solutions they might need," says Kestenbaum Prozan.

Thinx, for one, has implemented technology to integrate its own data systems with Ruby Has. "We were doing that before the pandemic," Fox says. "But that is one of the areas that has enabled us to continue our operations, to take on that order volume with scalable technology."

FOOD & BEVERAGE: CLICK AND EAT

In the food and beverage market, COVID has boosted several kinds of e-commerce. Consumers go online to order basket loads of groceries from retail chains for curbside pickup



FROM STORE TO OMNICHANNEL FULFILLMENT IN 3 WEEKS

WITRON Logistic and Informatik GmbH, based in Parkstein, Germany, were recently tasked with reconfiguring UK health and beauty retail giant Boots' existing Nottingham Store Service Center (SSC) into a fully functioning omnichannel fulfillment center in 3 weeks.

During the early stages of the pandemic, Boots continued to see foot traffic in retail locations, which included in-store pickups from online ordering. As the UK entered full lockdown procedures, retail sales plummeted and direct-to-consumer shipping soared, forcing an on-the-fly adaptation of the SSC.

For several months, Boots used an order management system that was set up above the warehouse management system. WITRON's IT experts "simply" redefined the SSC to a store—a huge store with massive inventory in just 3 weeks.

"We had never experienced anything like transforming a logistics center originally designed exclusively for store delivery into an omnichannel logistics center," says Jack Kuypers, vice president North-West Europe, at WITRON.

Originally designed to service more than 2,300 stores with millions of units from a 37,000 product range, Nottingham employed WITRON's Dynamic Picking System (DPS) and 252 workstations. The dynamic and automated picking of small items in DPS is supported by a pick-by-light system.

The DPS works according to both the goods-to-person and the person-to-goods principles. Depending on the order structure, items are arranged in the pick front either permanently or on demand, so that the picking process is optimized at all times.

The DPS supports different types of order picking: From tote into tote, from pallet into tote, and from tote into shipping carton. Regardless of the picking type, the picker is always guided by a pick-by-light system.

Large-volume items from the Boots inventory in the SSC are picked by radio data supported and route-optimized by the semi-automated Car Picking System onto roll containers. In total, Boots employees in Nottingham pick almost 3 million units on a peak day.

"During the crisis, we managed to ship more than 6,000 online orders per day," notes Alan Penhale, supply chain director at Boots.

or home delivery. They go to retail websites to order an item or two that a parcel carrier brings to the door.

Or sometimes they order from a manufacturer's own e-commerce site. PepsiCo,

for example, sells snack foods and beverages at PantryShop.com, and its Frito Lay and Quaker brands operate Snacks.com.

PepsiCo announced in November 2020 that it was

piloting a microfulfillment site for c-commerce in Joliet, Illinois, equipped with automation from Dematic.

Food and beverage manufacturers had already geared up to support retailers in responding to the surge in demand, but they were less prepared to see hordes of consumers order from them directly, says Tom Steininger, global market development director for food and beverage and consumer packaged goods at Dematic.

Manufacturers are used to shipping pallets and caseloads. “To start to go to eaches was a real disruptor,” Steininger says. “They hadn’t planned for that. They saw it coming, but I don’t think they saw it increasing.”

Microfulfillment, backed by technologies such as automated mobile robots (AMRs), gives both food and beverage companies and grocery retailers the flexibility to handle orders of various sizes and

configurations and get products to customers fast.

In the case of “click and collect,” when customers order groceries online for curbside delivery, the microfulfillment center might be at the back of the store, or it might be in a standalone location.

In one scenario, an automated shelf system sorts products and brings it to an operator, who picks orders and puts them in totes for customers. An e-commerce app tells the customer to drive up to a specific door.

“The customer goes there, the door opens, and their merchandise is waiting, brought there from the picker by one of the robots,” Steininger says.

ELECTRONICS: BLACK FRIDAY & BEYOND

Between people who needed gear for working and studying from home, and people who wanted better entertainment

options, COVID-19 created a healthy market for consumer electronics. Shipments of home computers and tablets increased by 11% in 2020, and revenues from game consoles rose by 18%, according to a Strategy Analytics report.

One major electronics firm, which uses technology from inVia Robotics in its e-commerce fulfillment, saw order volume more than triple in May and June of 2020, says Lior Elazary, CEO of inVia in Westlake Village, California. So officials knew that the peak holiday season would prove especially tough.

“Black Friday 2020 was even more difficult for many customers because there was a limited available labor force,” Elazary says. “And everybody wanted to buy products during that time.”

inVia provides robots that can, for example, deliver products to human operators who assemble orders, greatly reducing the

need for humans to walk around the warehouse. InVia also provides software that orchestrates work performed by both humans and robots.

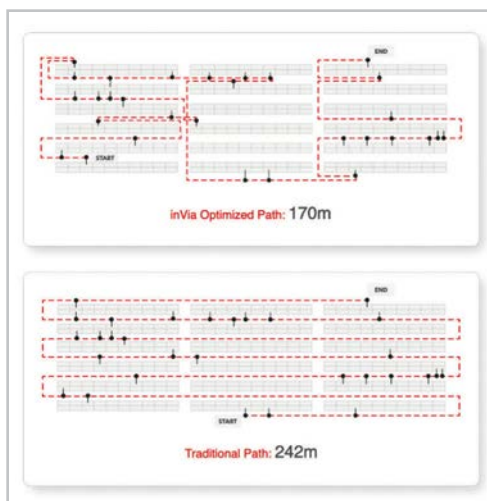
The electronics firm in question mainly sells personal computers and related accessories. Its fulfillment challenge is especially complex because it sells custom-configured products, letting buyers choose the components they want. When an order comes in, someone must quickly retrieve parts to assemble the product.

“It’s difficult to predict ahead of time what somebody would want,” Elazary says.

Three weeks before Black Friday, this company came to inVia for help. To gain a quick benefit, the company first deployed inVia’s software to manage the activities of human workers. That doubled efficiency, mainly by creating more efficient travel routes.

The company started to add inVia’s robots in spring 2021. It will take a while for those new systems to prove themselves, but other customers have seen productivity rise by a factor of 10, Elazary says.

As coronavirus vaccine programs continue to roll out, people everywhere are wondering how the return to normal will look. Given the public’s accelerated embrace of e-commerce, for companies that sell online, “normal” is likely to become a “new normal,” with novel processes and tools to help fulfillment operations meet demand. ■

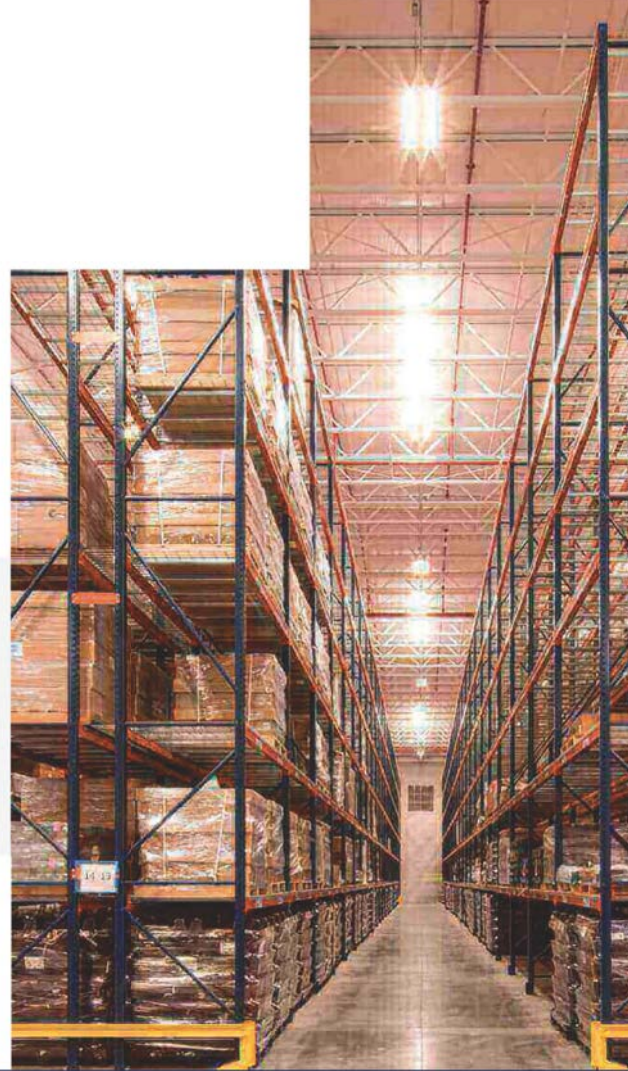


inVia robots work autonomously to retrieve and move goods in the warehouse, eliminating the need for workers to walk through aisles. They also calculate the most efficient path to follow.



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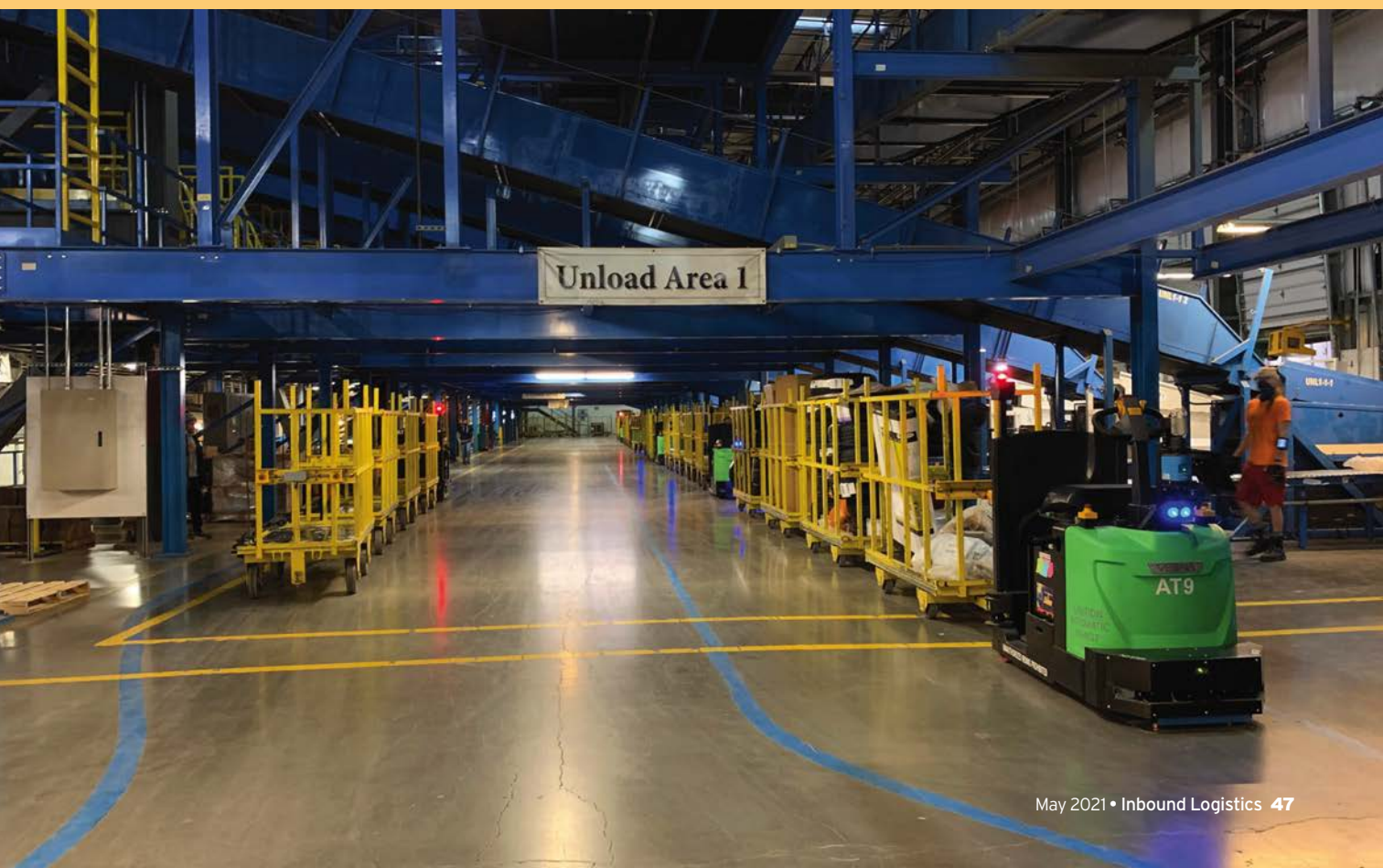
Solutions such as Vecna's autonomous pallet trucks, fork trucks and tuggers help move non-conveyables efficiently throughout the warehouse.



BULK MATERIALS HANDLING: CONVEYING THE NON- CONVEYABLE

The supply chain shift to e-commerce fulfillment presents a cumbersome materials handling challenge for bulky and oversized items that can't properly run on automated infrastructure.

BY KAREN KROLL



Over the past five years or so, Vecna Robotics has worked with companies experiencing a sustained jump in e-commerce shipments of non-conveyables—products such as furniture and appliances that are too large or bulky to fit within standard sortation equipment.

These items used to account for a small percentage of shipments but now “push 12 to 15% of total volumes,” says Matt Cherewka, director of business development and strategy with Vecna.

The jump in e-commerce sales of non-conveyables has disrupted many organizations. For instance, online orders for stationary bikes, treadmills, and weights spiked 55% between Jan. 1, 2020 and March 11, 2020, according to the Adobe Digital Economy Index.

Online sales of home furnishings have also jumped. In January 2020, eMarketer estimated online sales of furniture would reach \$76.8 billion for the year. By December, it had boosted its estimate to \$92.3 billion, up 20%.

A BRIGHT SPOT WITH CHALLENGES

In many ways, the growth in sales of non-conveyables has been a bright spot during a period when many businesses struggled. At the same time, handling these products presents unique challenges. True to their name, they don't fit within standard automation equipment and often have to be handled manually.

“Manual processes may have worked when these products represented a small segment of sales,” says Bruce Bleikamp, director of product management with Material Handling Systems, a provider of turnkey material handling automation solutions. “Companies could simply throw people at the problem.”

As e-commerce sales of non-conveyables have increased, that's becoming less practical.

Moreover, even though a manual approach worked in the past, it was rarely ideal. Manually moving non-conveyables increases the risk of damages and returns, boosting costs for shippers and logistics providers, says Chris Randall, vice president of revenue with Cymax Group, which offers an online platform that provides seamless customer acquisition, merchandising and logistics capabilities.

Turnover in warehouse positions focused on moving non-conveyables tends to be high. That means less experienced people often fill these roles, which can increase the rate of injuries and mistakes, Bleikamp says. And warehouse operators now have the added challenge of trying to maintain COVID-19 social distancing protocols, even when several people are needed to move a single non-conveyable.

While moving furniture, appliances, and other non-conveyables presents challenges even in more traditional supply chains, “the complexity in the supply chain jumps once orders

go direct-to-consumer,” says Jeff Christensen, vice president of product with Seegrid, an autonomous mobile robot developer. “The flow of material is much more complicated because it's much more granular.”

One order might include a washing machine, the next, a book, and the third, a pair of running shoes. The variety eliminates efficiencies of scale. “You can't fill a truck with 20 washing machines, as you could when moving items to a store,” Christensen says.

Moreover, consumer expectations for efficient, safe, and timely delivery extend to all orders, whether for a t-shirt or a bathroom vanity.

And, despite their size, non-conveyables can require just as much care as, say, bottles of perfume. Rowing machines, for instance, “require heavy, large, and long packaging, and their advanced technology makes them delicate,” Randall says.

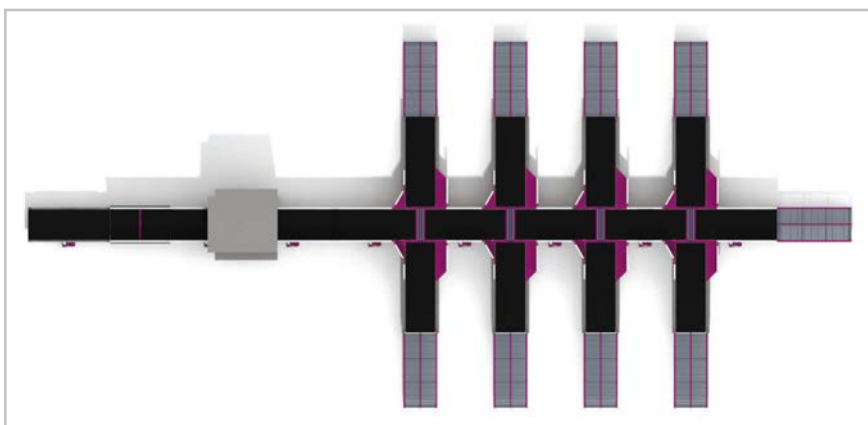
The challenges associated with non-conveyables are likely to continue, as e-commerce sales of these products show no signs of stopping. About half of U.S. consumers expect to maintain higher levels of online shopping for furnishings and appliances going forward, McKinsey reports (*see chart*).

Many consumers began online purchasing with smaller ticket items. “Since then, the value, physical size, and quantity of items purchased online have trended up alongside consumer confidence with the process,” says Mark Stothers, product manager with Fives Intralogistics Corp., an automation equipment provider.

TURNING TO FLEXIBLE AUTOMATION

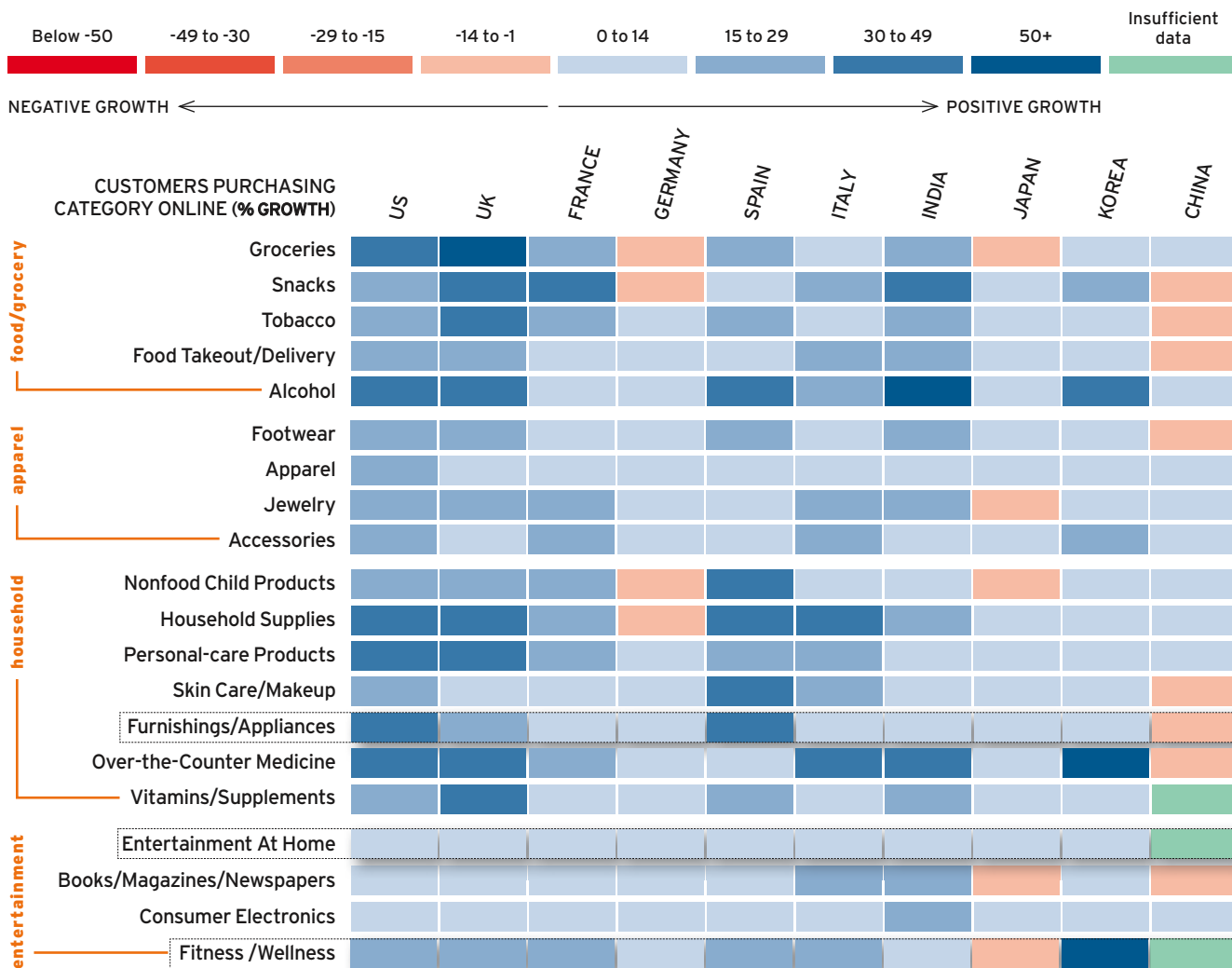
Given these trends, manufacturers and logistics providers have to “figure out a way to take an inefficient load and come up with an efficient method of transport,” Christensen says.

Their approaches increasingly encompass “flexible automation,” says Christian Dow, executive vice president of membership and industry leadership with MHI, a materials handling association. The idea is to employ



Fives Intralogistics Corp.'s GENI-Flex modular solution uses an innovative pop-up divert module to sort irregular and oversized packages from a central conveyor directly to outbound truck doors.

CONSUMERS EXPECT TO SHOP ONLINE MORE AFTER COVID-19 THAN THEY DID BEFORE



technology that expands the range of products that are considered standard and to which automation can be applied.

Many companies are turning to technology solutions such as automated guided vehicles (AGVs) and autonomous mobile robots (AMRs). The AGV/AMR market is expected to cross the \$5 billion mark by 2026, at which point these devices will have captured more than 18% of the overall warehouse automation market, according to Research and Markets.

“Robots hit the sweet spot,” Christensen says. By eliminating some manual operations, they can reduce product damage and injuries, while offering flexibility in what’s moved and how frequently.

The terms AGV and AMR are often

used interchangeably, but the two differ. AGVs travel with the aid of magnetic strips or wires and are used where movement is structured and monolithic. AMRs, in contrast, can work in dynamic environments with autonomous navigation. They use facility maps to find alternative paths if obstacles block defined routes, according to research firm LogisticsIQ.

MOVING WITH ROBOTS

To move non-conveyables, an AMR or AGV typically is placed underneath a cart, which is then loaded with one or more items. Many can handle up to several thousand pounds; some can hold up to 10,000 pounds.

AMRs also allow for multiple loading and unloading areas, enabling operators

Most product categories have seen more than 10% growth in their online customer base during the pandemic, and many consumers say they plan to continue shopping online even when brick-and-mortar stores reopen. That means the challenges associated with delivering e-commerce orders of bulky and oversized products such as furniture, appliances, and fitness products will continue.

SOURCE: MCKINSEY & COMPANY COVID-19 CONSUMER PULSE SURVEYS, CONDUCTED GLOBALLY BETWEEN JUNE 15 AND JUNE 21, 2020

to distribute work across a warehouse. “They don’t landlock areas of the facility like conveyors can,” Bleikamp says.

In addition, once an area is mapped, the vehicle can go where it needs to. The operators still control the vehicle’s route. But with no fixed infrastructure like wires or tape, the area in which an AMR can travel is “wide, flexible, and easily changed,” Bleikamp says.

Another benefit? A smaller footprint and ability to turn within their own

IMPLEMENTATION GUIDELINES

Technology like AGVs and AMRs can automate the transportation of non-conveyables, reducing manual handling and the errors, injuries, and product damage that can result. The following guidelines can help in optimizing the use of the technology.

1. Determine if it's worth the time and money to automate. Even though these technologies tend to be less expensive than many large sortation systems, it's still harder to justify the investment for products that sell in low and inconsistent volumes.

2. Clearly define the solution you need. How will you dispatch the vehicle? How will you prioritize activities? What is the goal? For instance, if you're currently handling a non-conveyable a dozen times, maybe you'll try to cut that by 75%.

3. Start small, gain experience, monitor the solution's operation in your facility, and grow steadily. One benefit of most flexible automation technology is that you can add pieces relatively easily. Often, it's possible to ramp up within hours or days.

dimensions make AMRs ideal for many tight environments. AMRs also tend to operate more predictably and methodically than forklifts. "The controlled travel makes them more stable," Christensen says.

Companies increasingly ask MHS to pursue these new technologies. "The need for them to run their businesses effectively with a general lack of labor is a growing issue," Bleikamp says.

In addition, companies building new facilities are allowing for more open dock space, wider transport aisles, and higher ceilings, all of which enable them



The Cymax Group of brands sells oversized products such as furniture and home decor. To ensure on-time and damage-free deliveries, the company applies advanced and automated materials handling solutions in its fulfillment centers.

to take full advantage of technologies like AMRs.

Some robots, including Vecna's, can adapt to their environment as they navigate, identifying and then taking the most efficient route.

"They plot multiple potential routes and choose the most efficient option based on factors like distance, traffic, and location of the stops along the route," Cherewka says. When necessary, they can reroute on the fly.

Vecna's orchestration engine can balance overall demand and dynamically assign more pickup requests to tuggers as capacity becomes available, boosting the tuggers' efficiency. (Tugger train systems consist of tugger carts that are towed by an operator acting as a locomotive to transport materials in the warehouse.)

Software that directs humans alongside robots and enables multiple robots to work together, like a forklift loading a tugger, is just hitting the market now. Cherewka expects implementations to start over the next year or so.

Along with tools that facilitate transportation, technology also helps shippers and logistics providers identify more efficient facility configurations.

For example, some warehouse management systems can identify the products that move most frequently, the high-traffic areas within a warehouse,

and the time required to store, pick, pack, and ship goods. By assembling this information, they can help design a warehouse layout that reduces bottlenecks and ensures popular items are more easily accessible than those that turn over more slowly.

REMAINING OBSTACLES

For all the progress that has been made in handling non-conveyables, challenges remain. While AGVs and AMRs can transport a range of non-conveyables, many of these products still need to be manually loaded and unloaded. "It's partial automation," says Dwight Klappich, vice president and analyst with research firm Gartner.

Even so, this hybrid model of using AGVs and AMRs to transport goods, while using employees to load and unload, will continue to grow.

Predicting when robotic arms capable of loading and unloading individual non-conveyables will hit the market is difficult, given their nonstandard shape and size, weight and bulkiness, and range of materials that make up the universe of non-conveyables. For instance, while a box typically will maintain its shape during handling, a roll of carpet is more apt to collapse.

"Making a robotic system that is capable of adapting to all non-conveyables will take some time," Cherewka says. ■

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TIMS

UNLOCKING TRANSPORTATION EFFICIENCIES



TRANSPORTATION MANAGEMENT SYSTEMS ARE KEY TO MANAGING SUPPLY CHAIN DISRUPTIONS, SHIFTING CAPACITY, FLUCTUATING FUEL COSTS AND DEMANDING E-COMMERCE CUSTOMER REQUIREMENTS.

BY KAREN KROLL

Most of us recall store shelves emptied of cleaning and paper products in the early days of the pandemic. While many shortages were steadily corrected, the supply and demand imbalance “brought transportation to the board room, and not for the right reasons,” says Shane Duncan, vice president of shipper solutions with freight marketplace Transfix. To address transportation challenges, shippers need to be able to pivot when issues arise.

A transportation management system (TMS) can help by bringing “structure to chaos,” Duncan says. For instance, a TMS might deploy dynamic routing guides that adjust with the market, providing flexibility and additional capacity when needed.

What exactly is a TMS? It’s a platform that uses technology to help businesses plan, execute, and optimize the movement of goods, says Daniela Hendricks, chief compliance and process officer with logistics provider Gebrüder Weiss. A TMS also can ensure shipments comply with regulations and include required documentation.

Current TMS solutions offer more capabilities than those of even a few years ago. For instance, today’s rating engines are expected to include multiple transportation modes, and TMS platforms’ increasing need to integrate with a range of other parties, including carriers and brokerages, says Jeff Lokant, director of technology operations with logistics management company Transportation Insight.

DRIVING INTEREST

Several shifts in the business world have boosted interest in TMS solutions. The pandemic highlighted both the volatility and importance of the transportation function. Many TMS platforms can provide routing optimization, visibility, traceability, and other capabilities that businesses need to compete in a post-pandemic landscape, says Sebastian Valencia, partner with Clarkston Consulting.

The shift to cloud-based TMS solutions is accelerating

the “democratization of TMS,” says Bart De Muynck, vice president and analyst with research firm Gartner. By providing automation and a single source of information with a nominal upfront investment, these solutions can offer value to even small shippers.

Like smartphones, TMS solutions also are becoming more open, says Fab Brasca, global vice president, global solutions with Blue Yonder. Their value comes not just from the solution itself, but from the “ecosystem” of applications they work with. Say a TMS provides coverage for road, but not ocean shipments. Increasingly, TMS solutions can connect with other providers to offer the capabilities they lack.

A TMS’s ability to eliminate paper files, while also storing and sharing shipment information electronically, has also become “a must in any TMS software during this pandemic,” Hendricks says.

Newer TMS solutions are built on “microservice architecture” that allows for easier integrations with other solutions through application programming interfaces (APIs). “It’s like the old Burger King model: ‘Have it your way,’” Lokant says, and select from more choices when integrating with other applications.

CONSIDERING A TMS

Given the democratization of TMS solutions, do they make sense for all organizations, big and small? “Size isn’t the key determining factor,” Valencia says. More relevant are the importance of managing transportation costs and/or meeting customer expectations. If these run high, even many small companies can justify investments in TMS solutions.

Also consider the ability of a TMS to enhance decision-making through improved intelligence, such as figuring out the best way to move 1,000 different products. A TMS also makes sense when manual processes have become bottlenecked and inefficient.

Before evaluating a specific TMS solution, here’s some advice:

Review your own operations. Consider your size and organizational structure, industry, the modes of transportation



you use, and the degree to which you operate internationally, De Muijnck advises. Say you move only domestic over-the-road shipments. A cloud solution geared to small operations may suffice.

Understand the pricing model to avoid surprises. Some TMS solutions charge per module and some per transaction.

Assess the software's user-friendliness. "A TMS should be intuitive and allow the user to get rates and create shipments fairly easily," says Kate Leatherbury, director of domestic transportation solutions with Gebrüder Weiss. To boost operational efficiency, the TMS should facilitate connectivity with other operating systems, as well as business partners.

Evaluate the TMS's ability to accurately represent network constraints. For instance, North America is home to many mammoth distribution centers, so it's easy to take dock capacity for granted, Brasca notes. Distribution facilities tend to be smaller in some other parts of the world. A solution has to recognize the constraints to accurately plan capacity. It also should be able to distinguish between, for example, the time required to load trucks with pallets versus boxes.

ROOM FOR IMPROVEMENT

Even as TMS solutions continue to advance and offer value to a broader range of organizations, there's still room for improvement. It's hard to find a single application that can cover all services with the depth most organizations need, in all regions of the world, Valencia says. Shippers often patch together multiple solutions to get all the capabilities they need.

Acquisitions are helping some companies incorporate more capabilities within a single platform. One example is MercuryGate's recent acquisition of Cheetah Software. In

MANY TMS PLATFORMS CAN PROVIDE ROUTING OPTIMIZATION, VISIBILITY, TRACEABILITY, AND OTHER CAPABILITIES THAT BUSINESSES NEED TO COMPETE IN A POST-PANDEMIC LANDSCAPE.

its announcement, MercuryGate indicated the acquisition extends its platform to include last-mile, parcel, and LTL capabilities, among others.

LOOKING AHEAD

TMS solutions of the future will increasingly incorporate technologies such as artificial intelligence (AI). "AI is not just a buzzword," Lokant notes.

For the moment, however, the industry resides in "AI 1.0," and many companies need more mature underlying data sets before AI solutions can "enrich a mainstream value proposition," he says.

In another shift, a broader approach to problem-solving is gradually replacing the supply chain's traditionally siloed focus, Brasca says. For this to continue, TMS solutions need to be more interoperable. "The TMS needs to be aware of other parts of the supply chain," he says.

The TMS industry also is moving to a "TMS-as-a-Service" model, rather than the perpetual license model that has been the norm.

Even as TMS solutions continue to improve, many businesses can benefit from investing in one sooner than they typically have. "Businesses stand to gain a significant competitive advantage if they consider investing in a TMS solution much earlier in their digital journey," Valencia says. ■



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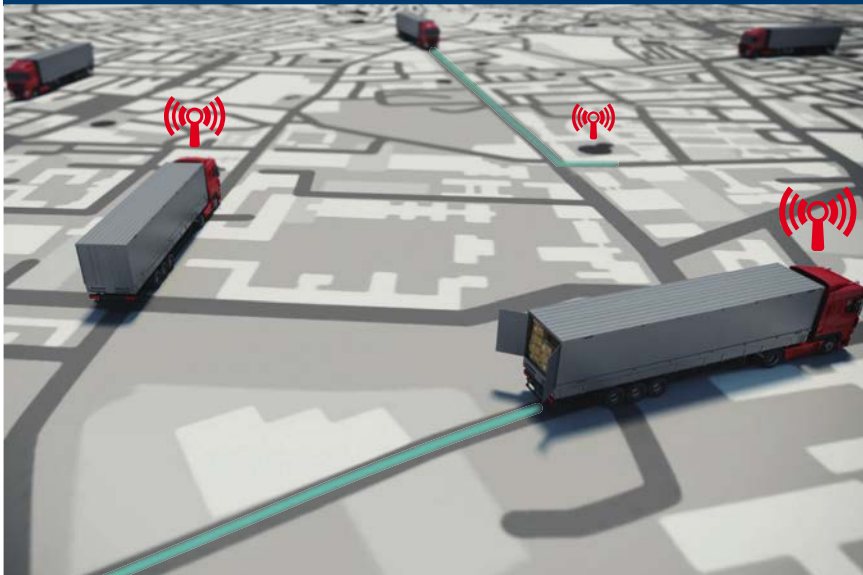
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920-707-3601

PRODUCT: 360data TMS

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3Gtms

www.3gtms.com
203-567-4610

PRODUCT: 3Gtms

PLATFORM: Cloud based

DESCRIPTION: Provides end-to-end transportation management and multi-carrier shipping resources for omnichannel shippers, 3PLs, and brokers.

3rdwave

www.3rdwave.co
416-510-8800

PRODUCT: 3rdwave iTMS

PLATFORM: Cloud based

DESCRIPTION: Provides end-to-end control of international transportation management. Manages ocean, air, and truckload shipments throughout the shipment lifecycle. Provides fully integrated freight contract management, freight auditing, freight booking, SKU-level in-transit visibility, port control, and monitoring.

4flow

www.4flow.com
313-777-8300

PRODUCT: 4flow iTMS

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Integrates supply chain optimization and transportation management—from strategic design to tactical planning and daily execution. Offers capabilities to manage complex logistics operations, including network design, multimodal transportation planning, sourcing, route management, 3D load building, and freight invoicing—as a stand-alone product or embedded into 4flow's managed services.

Agistix

www.agistix.com
650-362-2000

PRODUCT: Agistix

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PRODUCT: Aptean Routing & Scheduling Paragon Edition

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AscendTMS (InMotion Global)

www.TheFreeTMS.com
813-681-5000

PRODUCT: AscendTMS

PLATFORM: Cloud based

DESCRIPTION: Includes all the basic TMS features, as well as load and truck posting to 53 load boards; driver track and trace; a booking assistant for shippers, brokers, and 3PLs; instant load funding; document management; and load reporting.

Axele

www.axele.com
833-462-9353

PRODUCT: Axele TMS

PLATFORM: Cloud based

DESCRIPTION: Launched by Optym in 2020, Axele is an intelligent, connected solution built specifically for small to mid-sized truckload carriers.

Blue Yonder

www.BlueYonder.com
833-532-4764

PRODUCT: Blue Yonder Transportation Management

PLATFORM: Licensed to user (installed locally), Hosted on the vendor's website, Cloud based

DESCRIPTION: Manages end-to-end business processes from modeling and planning to last-mile delivery. Offers visibility into inbound and outbound transportation needs, along with supplier and carrier collaboration tools, to deliver a comprehensive assessment of opportunities available across the entire supply chain network.

BlueGrace Logistics

www.mybluegrace.com
800-697-4477

PRODUCT: BlueShip

PLATFORM: Cloud based

DESCRIPTION: Puts supply chain management and optimization into the hands of any shipper. Offers self-service tools such as instant quoting, scheduling, address books, product catalogs, and shipment tracking.

Camelot 3PL Software

www.3plsoftware.com
704-554-1670

PRODUCT: Excalibur Transportation Management System

PLATFORM: Cloud based

DESCRIPTION: Provides real-time tools to improve transportation execution with lower costs, higher productivity, and higher levels of customer service. Can be configured to meet a wide range of requirements.

CargoSmart

www.cargosmart.com
408-325-7600

PRODUCT: CargoSmart Transportation Management

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Provides global shipment management solutions for collaboration, visibility, and predictive insights that leverage artificial intelligence and IoT to optimize supply chain planning and operations.

Carrier Logistics

www.carrierlogistics.com
914-332-0300

PRODUCT: FACTS

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: For asset-based LTL and last-mile carriers. Includes online customer shipping tools, dispatch and driver management, a rate engine, cross-dock management, and a back-office suite.

CDM Software Solutions

www.s-c-technology.com
972-469-3082

PRODUCT: CDM Web Freight

PLATFORM: Cloud based

DESCRIPTION: Includes agent data exchange, a drag-and-drop document manager, global shipment compliance, and customer tracking at the shipment and commodity level.

Centrade

www.centrade.io
651-379-3050

PRODUCT: Centrade

PLATFORM: Cloud based

DESCRIPTION: A next-generation supply chain visibility, collaboration, and performance networked business platform. Designed to transform the supply chains of emerging and middle-market enterprises into a competitive advantage.

ClearTrack Information Network

www.cleartrack.com/clarity
615-877-4400

PRODUCT: Clarity Shipment and Order Visibility

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Automates the collection, monitoring, and measurement of shipment and order activities across trading partners, transportation modes, and logistics service providers. Empowers organizations to proactively detect and resolve problems while maintaining a predictable flow of goods across the supply chain.

CT Logistics

www.ctlogistics.com
216-267-2000

PRODUCT: CT TMS

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Leverages APIs and technology to support shipment planning and day-to-day execution with event tracking, spot quote management, and carrier performance reporting and analytics to increase profits. Allows for supplier access for lowest cost routing, tendering and tracking.

CTSI-Global

www.ctsi-global.com/tms
888-836-5135

PRODUCT: Honeybee TMS

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Empowers shippers to manage inbound and outbound transportation networks by managing orders; optimizing loads; selecting the best carriers; tendering shipments; manifesting parcel, LTL, and truckload; tracking progress; and managing claims. Users can connect data with other CTSI-Global services for logistics management, freight audit and pay, and business intelligence.

DAT

www.DAT.com/BrokerTMS
800-728-7305

PRODUCT: DAT Broker TMS

PLATFORM: Licensed to user (installed locally), Hosted on the vendor's website, Cloud based

DESCRIPTION: Designed specifically for brokers. Integrates operations, accounting, and analysis into a single system that saves time and boosts revenue. Manages load entry, truck search, dispatch/tracking, and customer profiles.

Descartes Systems Group

www.descartes.com
519-746-8110

PRODUCT: Descartes TMS

PLATFORM: Cloud based

DESCRIPTION: Synchronizes transportation operations, such as contract management, load planning and optimization, and execution and freight audit to control costs and enhance service. Provides extended capabilities for multimodal operations, including parcel shipping, real-time visibility, private fleet, and dock scheduling and YMS.

DigitalShipper

www.digitalshipper.com
651-348-4080

PRODUCT: DigitalShipper Enterprise

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Seamlessly integrates with a host system to fully automate small parcel and LTL rating and shipping processes. Multi-carrier software offers customized business rules, order consolidation, advanced rate shopping, and carrier service optimization.

E2open

www.e2open.com
866-432-6736

PRODUCT: E2open Transportation Management

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Enables real-time visibility, reporting and collaboration for domestic and global shippers. Selects carriers, modernizes booking, and automatically flags incorrect payments to increase productivity and profitability while reducing freight costs and delays.

Echo Global Logistics

www.echo.com
800-354-7993

PRODUCT: EchoTMS

PLATFORM: Cloud based

DESCRIPTION: Leverages AI, machine learning, and load-matching algorithms to create a flexible and effective system for shippers, carriers, and managed transportation clients.

Fortigo

www.fortigo.com
512-372-8884

PRODUCT: Fortigo TMS

PLATFORM: Cloud based

DESCRIPTION: Automates, optimizes, and audits logistics decisions to help enterprises reduce costs, improve customer satisfaction, and increase profitability. Optimizes logistics processes, minimizes ship-to-order times, and streamlines collaboration with logistics providers.

Freight Management, Inc.

www.freightmgmt.com
714-632-1440

PRODUCT: FMI All Access

PLATFORM: Cloud based

DESCRIPTION: Offers a full management suite of quoting, tendering, tracking, image retrieval, and customized reporting. Can be customized to a company's needs.

FreightCenter

www.freightcenter.com
800-716-7608

PRODUCT: FreightCenter TMS

PLATFORM: Cloud based

DESCRIPTION: Sources capacity, equipment, and carrier rates in one central portal. Seamless shipping management simplifies and streamlines freight shipping and improves customer service. Tracks shipments on the go via SMS text with real-time status updates.

Build a TMS bid list quickly
and easily:

www.inboundlogistics.com/cms/tms-rfp

Freightgate

freightgate.net
714-799-2833

PRODUCT: Freightgate

PLATFORM: Cloud based

DESCRIPTION: Offers supply chain collaboration and visibility, interactive online sailing schedules, multimodal and multifactor routing, quote management, regulatory compliance, and automated e-invoice audits.

FreightPOP

www.freightpop.com
949-454-4602

PRODUCT: FreightPOP

PLATFORM: Cloud based

DESCRIPTION: Simplifies logistics with one log-in for inbound and outbound freight—parcel, LTL, FTL, ocean, and international air. Integrates into a company’s current tech stack (ERP, WMS, CRM) and existing or new carriers. Easily configurable to existing workflows and processes.

GlobalTranz

www.globaltranz.com
866-275-1407

PRODUCT: GTZConnect TMS

PLATFORM: Cloud based

DESCRIPTION: An enterprise TMS for shippers, 3PLs, and carriers. Provides multimode rating, routing, optimization, and visibility with asset/carrier management, predictive analytics, integration, and freight pay and audit.

Highway 905

www.highway905.com
908-874-4867

PRODUCT: Highway 905 Transportation Management System

PLATFORM: Cloud based

DESCRIPTION: Helps optimize transportation costs with flexible freight rate management and audit, smart carrier selection, and efficient load consolidations.



Info-X

www.infox.com
646-915-0333

PRODUCT: Info-X TMS

PLATFORM: Cloud based

DESCRIPTION: Provides transportation management system solutions and digital transformation services to NVOCCs, freight forwarders, shippers, and carriers. Specializes in transforming logistics companies using a mix of automation technology, process re-engineering, and global service delivery.

Infor

www.infor.com
646-336-1700

PRODUCT: Network Transportation Management

PLATFORM: Cloud based

DESCRIPTION: Control tower orchestration provides multimodal transportation visibility and synchronized, multiparty, multileg planning, in addition to freight procurement and optimized, automated execution.

Intellect Technologies

www.intellecttech.com
609-454-3170

PRODUCT: Intellect eFreight

PLATFORM: Licensed to user (installed locally), Hosted on the vendor’s website, Cloud based

DESCRIPTION: Supports domestic and international ground, warehousing/CFS, air, ocean, customs filing. ACE compliant and API/EDI enabled. Configurable, customizable, and scalable to meet specific needs. Direct connectivity to Customs and carriers with tracking visibility. Includes accounting, purchase order management, customer portal, and sales CRM.

IntelliTrans

www.intellitrans.com
800-603-9175

PRODUCT: IntelliTrans TMS

PLATFORM: Cloud based

DESCRIPTION: A niche TMS for the bulk commodities market with a focus on digitizing supply chains. Customer verticals include chemicals and plastics, forest and building products, metals and mining, oil and energy, and agriculture and food products.

Kenco

www.kencogroup.com
800-758-3289

PRODUCT: Kenco STARR

PLATFORM: Cloud based

DESCRIPTION: Empowers small to mid-sized shippers with the technology, resources, and competitive rates needed to effectively manage transportation networks and disruptions—all through a single point of contact.

LOG-NET

www.LOG-NET.com
732-758-6800

PRODUCT: LOG-NET

PLATFORM: Licensed to user (installed locally), Hosted on the vendor’s website, Cloud based

DESCRIPTION: Enables global transportation, order, and distribution management. Supports collaboration and integration with suppliers, transportation providers, internal applications, and ERP systems.

Logistix Solutions

www.logistixsolutions.com
571-426-5951

PRODUCT: ProLogix Transportation Optimization

PLATFORM: Licensed to user (installed locally)

DESCRIPTION: Optimizes LTL/FTL freight transport, routing and scheduling, modes, carriers, and vehicles based on rates, orders, and customer service requirements. Algorithms generate multi-stop truckload, consolidated LTL, and private fleet routes and schedules that save costs, miles, vehicles, and drivers.

Logistyx Technologies

www.logistyx.com
877-755-2374

PRODUCT: Logistyx TME

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Specifically designed for parcel shipping. Combines advanced business intelligence and a global network of 550+ carrier integrations. Provides carrier compliance, predictive analytics, and shipment tracking from start to finish to enable on-time delivery and increase profits per shipment.



Princeton TMS

A TMS FOR TODAY'S WORLD

With the industry leading, next-generation Transportation Management Software, we give you the product, the people, and the vision to help you succeed.



Absolutely **NO Startup Fees From Princeton TMS!**

Princeton TMS is a one stop shop for all your TMS needs.
We offer a world class user experience with no start up fees, ever.
You can be live in less than 60 days!

princetontmx.com | 1-800-435-4691

MGN Logistics

www.mgnlogistics.com
610-252-2220

PRODUCT: Managed Transportation Solution

PLATFORM: Cloud based

DESCRIPTION: Delivers automated comprehensive carrier rate quoting, rate confirmation, bill of lading, proactive shipment tracking, proof of delivery, detailed invoicing, and freight claim management. Performs audit reconciliation and discrepancy resolution based on current industry regulations. Offers reporting tools highlighting KPIs and forecasting trends.

Made4net

www.made4net.com
201-645-4345

PRODUCT: Made4net TransportExpert

PLATFORM: Licensed to user (installed locally), Hosted on the vendor's website, Cloud based

DESCRIPTION: Optimizes planning, routing, and fleet operations by managing all the resources of the trucking system. System includes an automatic work placement sorter for drivers and vehicles with a preference option according to costs and constraints.

Manhattan Associates

www.manh.com
877-596-9208

PRODUCT: Manhattan Transportation Management

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Helps organizations manage every transportation function, across any mode or network size. Offers strategic analysis, procurement, operational planning, execution, visibility, and freight payment/claims. Helps shippers reduce transportation costs, improve service levels, automate processes, streamline execution, and lower operational risk.

MPO

www.mpo.com
646-520-0841

PRODUCT: MPO Order and Logistics Management Solution

PLATFORM: Cloud based

DESCRIPTION: Enables end-to-end supply chain orchestration, spanning both planning and execution. Factors broad considerations and constraints—such as order requirements, carrier capabilities, and rate and service level options across inbound, outbound, and reverse flows—to ensure every customer order is optimized.

Next Generation Logistics

www.DynamicsTMS.com
847-963-0007

PRODUCT: Dynamics TMS

PLATFORM: Licensed to user (installed locally), Hosted on the vendor's website, Cloud based

DESCRIPTION: An enterprise planning, execution, and supply chain collaboration suite that can be quickly deployed to manage a single company or multiple legal entities.

Nulogx

www.nulogx.com
905-486-1162

PRODUCT: TMS Online

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: A hosted solution that supports all the activities necessary to manage and execute the full lifecycle of the transportation process.

Nuvocargo

www.nuvocargo.com
917-521-5157

PRODUCT: Nuvocargo

PLATFORM: Cloud based

DESCRIPTION: All-in-one digital platform for cross-border trade between the United States and Mexico, offering freight forwarding, customs brokerage, cargo insurance, and supply chain financing. Combines technology with a team of bilingual experts to seamlessly integrate the end-to-end movement of cargo in a single platform.

One Network Enterprises

www.onenetwork.com
866-302-1936

PRODUCT: One Network Transportation Management System

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Provides end-to-end multiparty logistics planning, scheduling, and execution capabilities—from sourcing to invoicing, across all modes and services. Includes real-time tracking, advanced analytics, and exception management. Integrates to order and warehouse management. AI and machine learning autonomously detect and resolve logistics-related issues.

SPONSORED

nVision Global

www.nvisionglobal.com
770-474-4122

PRODUCT: Impact TMS

PLATFORM: Hosted on the vendor's website, Cloud based

DESCRIPTION: Impact TMS provides the visibility and management of global shipments from creation through delivery. Users can integrate all the must-have features of a TMS solution with nVision Global's other technologies, such as freight audit and payment, freight claims, and business analytics. nVision Global is one of the few providers that can offer these solutions in a single package and still offer a configurable TMS solution that meets your exact needs and specifications.

nVision Global®

Oracle

www.oracle.com/logistics
800-392-2999

PRODUCT: Oracle Transportation Management

PLATFORM: Cloud based

DESCRIPTION: Manages all transportation activity throughout the global supply chain. Enables users to run logistics operations more efficiently, reduce freight costs, and optimize service levels.

PCS Software

www.pcssoft.com
833-415-9500

PRODUCT: PCS Software

PLATFORM: Cloud based

DESCRIPTION: An AI-driven, unified transportation logistics platform for shippers, carriers, and brokers. Simplifies and optimizes day-to-day logistics operations and unlocks strategic data-driven insights for greater control, profitability, and competitive advantage.

Pierbridge

www.pierbridge.com/transtream
508-630-1220

PRODUCT: Transtream

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: An enterprise multi-carrier parcel management solution that automates parcel planning and execution for shippers of all sizes.

Primus Intellectual Solutions

www.shipprimus.com
312-800-1942

PRODUCT: ShipPrimus

PLATFORM: Cloud based

DESCRIPTION: Geared to 3PLs, 4PLs, and brokers. Provides an API-based platform to rate shop, dispatch, track and POD for LTL, volume, FTL and parcel shipments electronically. Allows seamless management of shipments, customers, vendors, and billing.

Princeton TMX

www.princetontmx.com
800-435-4691

PRODUCT: Transportation Management Software

PLATFORM: Cloud based

DESCRIPTION: Provides tools to improve efficiency, freight spend, load-planning execution and settlement, as well as to optimize carrier selection.

ProShip

www.proshipinc.com
414-302-2929

PRODUCT: ProShip Multi-Carrier Shipping Software

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: A platform designed for high-volume parcel shipping. Offers multiple shipping methods and a variety of benefits for companies shipping parcel including increasing sales, managing shopping cart shipping expectations, outbound LTL, rate shopping, carrier compliance, and an omnichannel distribution strategy.

QAD Precision

www.precisionsoftware.com
312-239-1630

PRODUCT: QAD Precision Transportation Execution

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: A global, multi carrier, multi-modal solution to manage both inbound and outbound shipments. Users can digitize decision-making with automated routing; compare carrier rates, routes, and service levels; generate multilingual labels and documentation; track shipments; and access real-time shipping analytics.

Ramco Systems

www.ramco.com
609-647-9299

PRODUCT: Ramco TMS

PLATFORM: Cloud based

DESCRIPTION: A digital platform designed for 3PLs, freight forwarders, and express parcel service providers. End-to-end business solution that covers LTL, FTL, first mile, last mile, line haul, and express. Helps lead service providers plan, optimize, execute, track, report, and integrate.

RateLinx

www.ratelinx.com
480-801-5500

PRODUCT: ShipLinx

PLATFORM: Cloud based

DESCRIPTION: A global, multimodal, modular, scalable, and small-parcel-enabled TMS delivering planning, execution, optimization, visibility, payment, and prescriptive insights with no professional service fees.

SaaS Transportation

www.web.saastransportation.com
901-832-2401

PRODUCT: SaaS Transportation

PLATFORM: Cloud based

DESCRIPTION: A TMS solution for 3PLs, freight payment companies, and shippers. APIs easily integrate with numerous trading partners with minimal setup time. Automates the LTL process from carrier selection to final shipment delivery.

ShippersEdge TMS

www.shippersedge.com
888-237-2465

PRODUCT: ShippersEdge TMS

PLATFORM: Cloud based

DESCRIPTION: Offers an array of standard features and modules to cover all modes and needs. Process can be automated around business rules, and can work in unison with business intelligence, ERP, MRP, WMS, and other software.

Want to share this guide with your team? Download a digital version:
bit.ly/TMS-2021

Shipwell

www.shipwell.com
512-333-0898

PRODUCT: Shipwell

PLATFORM: Cloud based

DESCRIPTION: Combines transportation management, visibility, and an integrated partner network in one simple and responsive platform that scales as a company grows.

Softeon

www.softeon.com
703-833-2848

PRODUCT: Softeon TMS

PLATFORM: Cloud based

DESCRIPTION: Manages complex transportation needs, with strong parcel shipping functionality, support for private fleets, and dynamic routing.

SwanLeap

www.swanleap.com
608-709-8050

PRODUCT: SwanLeap

PLATFORM: Cloud based

DESCRIPTION: A mode-agnostic global TMS platform that offers real-time interconnectivity of the entire supply chain to provide visibility, speed, and control. Cloud architecture enables scaling according to specific business needs.

Tecsys

www.tecsys.com
800-922-8649

PRODUCT: Tecsys Elite TMS

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Enables transportation planning and execution for common carrier or proprietary courier fleets. Helps organizations achieve the dependability, transparency, and efficiency of a world-class distribution courier throughout the entire chain of delivery—from orders and drivers to fleets and routes.



TransAmerica Express Logistics

www.transamericaexp.com
916-543-1704

PRODUCT: TransAmerica Express TMS

PLATFORM: Cloud based

DESCRIPTION: A versatile logistics management solution created to provide businesses with enhanced route plans, quick execution, and unrestricted accessibility.

Transporeon

www.transporeon.com
267-281-1555

PRODUCT: Transporeon

PLATFORM: Cloud based

DESCRIPTION: Offers a global collaborative platform for supply chain communication. Connects shippers with carriers and provides free-of-charge shipper support along with carrier onboarding, training, and support in all key languages. Logistics platforms offer instant access to transportation market intelligence services, powered by big data.

Transportation Insight

www.transportationinsight.com
877-226-9950

PRODUCT: Insight TMS

PLATFORM: Cloud based

DESCRIPTION: Blended proprietary and commercial platform offering order, mode, route, and carrier optimization; shipment rating, execution and tracking; process automation; and management of shipping documents and communications.

TransportGistics

www.TransportGistics.com
631-567-4100

PRODUCT: TGI:TMS

PLATFORM: Licensed to user (installed locally), Hosted on the vendor's website, Cloud based

DESCRIPTION: Provides simple, incremental solutions to improve, monitor, and enforce compliance among partners. Reduces, uncovers, and avoids excessive costs through planning, execution, and analytics.

Trimble

transportation.trimble.com
866-914-5299

PRODUCT: Innovative

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Manages the entire order-to-cash process for small or large transportation companies. Provides operational, administration, financial, and safety tools.

UROUTE

www.uroute.net
313-600-5308

PRODUCT: UROUTE

PLATFORM: Cloud based

DESCRIPTION: A TMS and interactive freight exchange designed to strengthen the connection between shippers and capacity providers. Eliminates manual tasks and data entry through API integrations that connect systems.

Varsity Logistics

www.varsitylogistics.com
650-392-7979

PRODUCT: Varsity Logistics

PLATFORM: Licensed to user (installed locally), Cloud based

DESCRIPTION: Replaces stand-alone, carrier-provided systems. Integrates with ERP and/or WMS. Saves money, improves customer service, and easily handles more shipments daily.

Web Integrated Network

www.gowithwin.com
855-946-4739

PRODUCT: Web Integrated Network

PLATFORM: Cloud based

DESCRIPTION: A cost-effective, web-based tool that helps manage freight with just a few keystrokes. Capable of fully integrating with existing systems.



Freight Bill Audit & Payment

TMS & 3PL
Managed Freight
Negotiation Services
Global Audit & Payment
BI & Analytics
Benchmarking
Consulting

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WHY A YIMIS?

COMPANIES OFTEN OVERLOOK THE YARD OUTSIDE THEIR WAREHOUSES OR MANUFACTURING PLANTS. THESE YARDS, HOWEVER, CAN BE SOURCES OF EFFICIENCY ...OR DELAYS.





yard management system (YMS) “supports the efficient flow of work, equipment, and material through the normally enclosed area outside of a warehouse, distribution center, or manufacturing facility,” says Gartner’s

Market Guide for Yard Management study. A YMS also supports the control and movement of trucks, trailers, and containers in the yard.

The YMS capabilities housed within a warehouse management system may be all some organizations need. But companies that need more robust capabilities may find that built-in solutions come up short.

WHEN TO CONSIDER A YMS

A YMS might be right for your company if you:

- Have multiple yards servicing many plants or warehouses and need help with tracking and control.
- Deal with poor management and scheduling, which leads to bottlenecks at the dock and within the yard, causing detention and demurrage charges and even lost sales.
- Need help managing the growth of e-commerce and the related demands for an automated, real-time ability to assist a warehouse management system.

JUSTIFYING THE INVESTMENT

Advancing technology promises even more value from future generations of YMS solutions. Yet investment in yard technology tends to fall to the bottom of the list of many companies’ supply chain budgets. One reason is the perceived rate of return on that investment. To execute a project with a solid ROI requires clear objectives that are attainable and deliver value to the operation.

The following five areas are an excellent starting point to justify investment in yard automation, according to Greg Braun, senior vice president of sales and marketing at C3 Solutions, a dock scheduling and yard management systems vendor.

1. Driver self-check-in at the gate. A poorly managed gate results in drivers having to excessively wait to get on site and/or not have accurate instructions on where to deliver their trailer. In both cases, delays with product reception and driver detention charges are incurred.

Automating a gate operation starts with providing drivers with the means to carry out a self-check-in using their smartphone. Regardless of when the check-in is performed, once the driver crosses the site’s geofence, a message is sent to the driver indicating where they need to drop their trailer and any other helpful information that the site needs to communicate. Not only does this streamline the overall gate process, but drivers also appreciate the quick turnaround time.

2. Carrier self-serve appointments. Another means to avoid congestion in the yard is to ensure an even flow of

arriving drivers. When carriers are allowed to arrive at any time, they invariably end up all arriving simultaneously. Not only does this create issues at the gate and in the yard, but it also has a severe impact on warehouse throughput.

Implementing an automated dock scheduling system is a necessary step to improving the efficiency of your yard operation. Allowing carriers to request appointment times via a self-service web portal enables your operation to maintain an even flow of vehicles that increases the throughput of your process without increasing clerical effort.

3. System-directed trailer moves. A yard management system requires that a trailer move request is made in a timely and orderly manner. It is all too common for a dock operation to call out multiple trailer moves at the end of a shift rather than requesting moves as they occur. A process that does not direct trailers strategically risks creating dock congestion and potentially delaying the reception of priority goods.

An automated process-driven yard system moves trailers in an optimal order for the business. And in a complex operation where trailers need to be loaded at multiple locations before departing, a well-defined process keeps partially loaded trailers from being misplaced. Effective system-directed trailer moves ensure that the right trailer gets to the right door at the right time.

4. Carrier notifications. Trailer detention can be a significant problem for any yard operation relying on third-party trailers. Trailer detention fees are typically applied once trailer dwell time exceeds an agreed-upon grace period. Tracking detention fees and notifying carriers when their equipment is available is time consuming and unproductive.

An automated yard management system not only ensures that trailers are received in an order that minimizes detention time, but it also automatically notifies carriers once their equipment is available.

5. Optimized task management. Managing dedicated yard trucks is the largest direct cost area related to yard management. In contrast to forklift operations in the warehouse, most yard truck operations are essentially run haphazardly. The direct operating costs are a major concern. The ripple effect on the rest of the operation can often have an even greater impact on the business in both costs and missed service commitments.

Automated task management is where a strong yard system pays for itself. A system needs to identify when trailer moves can be eliminated—for example, unloaded trailers should be sent directly to a loading door when possible. Self-learning algorithms should be used to allocate trailer moves to the best driver based on their current performance. This level of automation minimizes the amount of empty distance yard drivers travel and ensures that the yard serves the business operation at the lowest possible cost.

Investing in technology focused on strategic aspects of your yard operation not only maximizes your return on investment but also ensures that your yard can sustain your company’s growth. ■

2021 YMS Guide

A yard management system (YMS) can provide significant benefits to your operation by managing shipments from the yard gate to the dock. Here's a short list of leading providers to help start your search.

C3 Solutions

www.c3solutions.com
514-315-3139

PRODUCT: C3 Yard

DESCRIPTION: Empowers yard managers by providing visibility on yard assets, optimizing the flow of trailers from gate to gate, and automating yard driver task assignment.

Cypress Inland Corporation

www.yardview.com
303-781-3430

PRODUCT: YardViewPro

DESCRIPTION: Provides dock scheduling, yard driver tasking and management, gate control and recording, automation, and visibility for all departments, customers, and carriers.

Descartes Systems Group

www.descartes.com
519-746-8110

PRODUCT: Descartes YMS

DESCRIPTION: Yard management and trailer tracking software that tracks trailer and content movement across locations and accesses trailer history, driver and yard activity.

Exotrac

www.exotrac.com
212-989-0171

PRODUCT: YardTrac Pro and Lite

DESCRIPTION: Comprehensive real-time YMS delivers high functionality and speed at an economical price point. Web and mobile applications suited to any vertical in the supply chain.

FourKites

www.fourkites.com
888-466-6958

PRODUCT: Dynamic Yard

DESCRIPTION: Gives enterprises the ability to proactively manage facilities based on real-time in-yard freight data and analytics. The system's data allows enterprises to reduce detention and demurrage costs, and optimize operations throughout all facilities company-wide.

Korber

www.koerber-supplychain.com
800-328-3271

PRODUCT: K.Motion YMS

DESCRIPTION: Enables users to track trailers, yard inventory, and movement between doors and yard for faster trailer turns and strategic staging by trailer type.

Made4net

www.made4net.com
201-645-4345

PRODUCT: Made4net YardExpert

DESCRIPTION: Tracks pertinent information for trailers, manages yard check in and wait times, and schedules and prioritizes dock assignments.

One Network Enterprises

www.onenetwork.com
866-302-1936

PRODUCT: One Network Yard Management System

DESCRIPTION: Provides gate-dock-gate real-time visibility of equipment and inventory. Optimally plans, executes, and audits loads synchronized to warehouse, dock-door scheduling, and demand priorities.

PINC Solutions

www.pinc.com/yard-management
877-511-PINC

PRODUCT: PINC Yard Management System

DESCRIPTION: Handles operational needs including inventory, workflow automation, carrier management, gate appointments, yard visibility, dock door scheduling, yard and shuttle trucks, metrics, and real-time location information.

Sentier Systems

www.yardcommander.com
866-503-4823

PRODUCT: Yard Commander

DESCRIPTION: A fully functional, budget friendly YMS that offers visibility to assets in the yard as well as historical data of asset transactions.

Yard Management Solutions

www.yardmanagementsolutions.com
800-766-6197

PRODUCT: Yard Management Solutions

DESCRIPTION: Constantly monitors every aspect of a yard operation to keep users updated on KPIs, employee performance, and potential problems. Provides dock scheduling, automatic gate entry systems, detention destroyer, real-time visibility of trailers, automated putaway and communications.

Zebra Technologies

www.zebra.com
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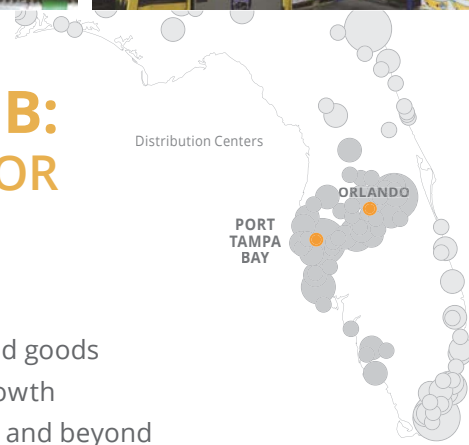


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PALLETS POWER PROCESSES

**From materials handling to retail operations,
pallets support supply chains and
sustainability goals.**

PALLETS

If you want to see what keeps pallet company executives awake at night, walk through the nearest warehouse store, where you might see the latest fashions displayed on a plywood table lifted to waist height by a stack of pallets at each corner.

The sight of supply chain assets such as pallets sitting idle is similar to a semi-trailer being used as a temporary warehouse instead of hauling loads across the country. While they should be humming through the supply chain, those pallets are building up dwell time.

A pallet sitting too long in one place effectively reduces the supply of pallets, driving up costs and consumption of resources to make them.

The problem is, pallets are everywhere, and people sometimes take them for granted. Pallets, and related products like skids, have been around for nearly a century and evolved alongside the development of the forklift.

During World War II, their use took off, and they have been a critical link in the supply chain ever since. Those first pallets were made from wood, but over the years pallets have been constructed from corrugated cardboard, steel and other metals, and plastic.

More than 2 billion pallets are in circulation in the United States, and more than 90% of all goods are shipped on pallets, according to industry estimates. As warehouse automation technology develops and supply chains are under pressure to be more efficient, pallets are in the spotlight like never before.

KEEP THEM MOVING

Take the issue of dwell time that makes pallet executives cringe. Dwell time is counted from the time a pallet reaches a point of use, such as a manufacturing plant or distribution center, it's loaded



As North America's largest pooler of 48x40 plastic pallets, iGPS improved its pallet utilization by about 1.5 more turns during the pandemic to supply consumer goods such as food and cleaning supplies.



with product, delivered, and then turned back into the pallet pool for reuse.

At iGPS, an Orlando, Florida-based plastic shipping pallet supplier, the average pallet dwell time is about 30 days, according to Jeff Pepperworth, president and CEO. During 2020 and the supply chain disruption due to COVID-19, iGPS—North America's largest pooler of 48x40 plastic pallets—improved its pallet utilization by about 1.5 more turns.

Due to the shift in consumer demand and the supply chain during the pandemic, it was more important than ever to keep pallets circulating to supply consumer goods such as food and beverages, cleaning supplies, and paper goods.

“When you look in your pantry, those products were pretty much all the volume that we saw from categories that have excellent growth,” Pepperworth says. “Being able to utilize our fleet in a way that expanded another turn and a half was very advantageous.”

THE LONGEVITY OF PLASTIC PALLETS

Oconomowoc, Wisconsin-based ORBIS Corporation offers plastic pallets in pools and management services and works to manage dwell times. Plastic pallets are designed to handle the longevity of being in a system without imposing added costs for items that may not move as quickly.

“Products that are captive to a warehouse, distribution, or fulfillment center and have ‘high’ dwell times are the best fit for reusable plastic pallets,” says Alison Zitzke, senior product manager for pallets, ORBIS Corporation.

Whether in a tight, closed shipment loop or inside a facility, the life of a plastic pallet will skyrocket. In a study

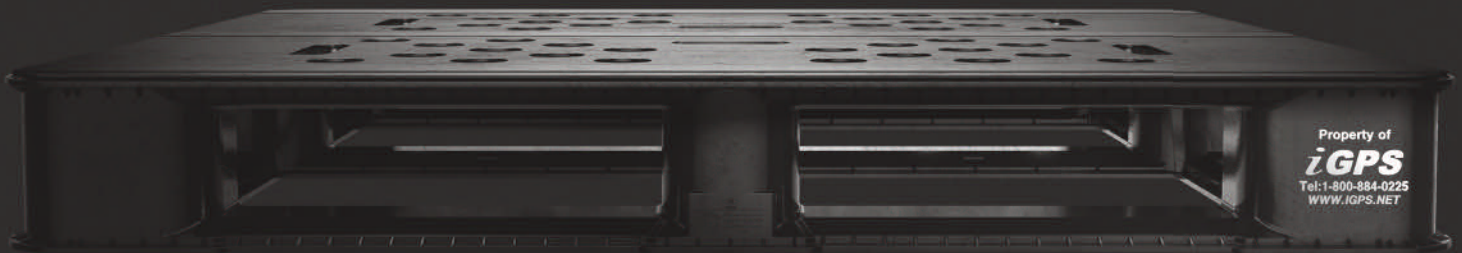
As warehouse automation technology develops and supply chains are under pressure to be more efficient, pallets are in the spotlight like never before.

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THIS WAY FORWARD





ORBIS Corporation, a subsidiary of Menasha Corporation, is a leading manufacturer of plastic returnable/reusable products for use in a wide range of material handling applications. ORBIS pallets are washable and hygienic, which is crucial for transporting essential goods during the pandemic.

conducted at Virginia Tech, a plastic pallet lasted more than 200 turns versus a white wood pallet at 11 turns.

“This could mean an additional 20 years added to the life of a plastic pallet,” Zitzke says.

SMARTER PALLETS

Until very recently, pallets were siloed assets because there was no supply chain connectivity or way to engage. That’s changing as technology plays a more significant role across the supply chain and pallets are getting smarter.

For companies considering investing in warehouse automation, pallets should be a part of the planning process rather than an afterthought, says Pepperworth.

The entire iGPS fleet is equipped with RFID tags and barcodes to interface with standard automation technology, so that capability could be built into the system. Instead of tagging every carton or product, shippers can incorporate the RFID tags to track products through the warehouse and the rest of the supply chain.

“If a company ships a pallet of water

to a warehouse store, we know the pallet went out, and it will eventually need to come back,” Pepperworth says.

RFID technology is non-proprietary, so it can be used across many different systems, from point of sale to ERPs. That’s especially useful for companies that have grown through mergers and acquisitions and haven’t integrated technology systems.

“An RFID chip and a barcode are universal across scanning technologies,” Pepperworth says.

Pallets that can communicate are game changers for warehouse automation.

“We have customers that have replaced what they would consider their license plate on a pallet with our RFID chip, so pallets are now a smart asset,” Pepperworth says. “Every time I visit a customer, there’s always some kind of new utilization, and we’re on the cusp of explosive automation growth over the next 10 years.”

The tracking technology could also assist with immediate product recalls. The product in question can be tracked to the pallet and the location in the

warehouse to remove it from circulation.

Plastic pallets are favored for highly automated operations because they are dimensionally consistent and create a smooth interface between automated systems and product loads. Wood pallets have a higher likelihood of broken boards or nails popping out, causing potential downtime in an automated system, as well as possible product damage.

LONGEVITY AND READABILITY

“Plastic pallets offer long-term, repeatable performance and easy readability by photo eyes and sensors that are critical to seamless integration in automated environments,” Zitzke says. “Pallet users should consider these factors when they calculate return on investment for reusable packaging to gain a holistic picture of cost.”

Plastic pallets contribute to a higher level of uptime in automated operations. Wood pallets may be damaged or become damaged and leave behind debris and dust in the automated system.

That can lead to shutdowns for cleaning or repairs.

“Plastic pallets are a consistent asset that can fit into those automated environments,” Pepperworth says.

The cleanability of plastic pallets and their long service life make them ideal for integrating with a new or existing automated system with added benefits of ensuring the plant is kept clean and products are protected. Plastic pallets are even offered in FDA-approved material for direct contact applications that require high hygienic standards, such as food and beverage manufacturing.

PALLETS AND THE PANDEMIC

During the early pandemic lockdowns, pallets were considered an essential service to keep store shelves stocked. When product shortages arose, pallets had to be available to move goods to the grocery and healthcare channels. The growth of home delivery

and curbside pickup didn’t lessen the demand for pallets.

“It still takes pallets to get bulk loads down to fulfillment and single distribution,” Pepperworth says.

As pandemic restrictions ease, consumer buying habits may be forever altered, leading to new supply chain patterns. Consumers may shop less frequently but buy more per visit, requiring new strategies to maintain fulfillment levels.

Zitzke sees COVID as a catalyst for rapid, significant change in the supply chain and warehousing and distribution environments. Programs that used to take years to justify are being implemented more quickly because companies are

being pressured to adapt to new trends like increased consumer e-commerce buying patterns or the need for washable, hygienic pallets.

“During the pandemic, plastic pallets were crucial in the transportation of essential goods like toilet paper and cleaning materials,” Zitzke says. “Suppliers needed to cube out pallets and trucks to transport as much as they could in a single load due to trucking and freight labor constraints.”

SUPPORTING SUSTAINABILITY

Supply chains are under scrutiny regarding their environmental impact, and pallet suppliers are supporting sustainability trends. Many large shippers

The cleanability of plastic pallets and their long service life make them ideal for integrating with new or existing automated systems.

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PALLETS EVOLVE AND RESPOND TO DEMAND



Mitchell Kamps, president of Grand Rapids, Michigan-based pallet company Kamps Inc., discusses the latest market trends and pallet developments.

Q: How have pallets evolved recently?

A: As our economy continues to grow, fueled by the rise in manufacturing, e-commerce, and globally connected supply chains, the demand for wooden pallets has increased. We're seeing interesting challenges in the pallet space, especially regarding pallet recycling and recycled pallet supply.

Q: As supply chains become more automated, what role do pallets play?

A: Pallets will continue to be essential, but their role will evolve. Pallet providers must be able to meet automation expectations whether customers need new or recycled pallets.

Pallet providers should have systems that easily integrate with automated supply chains. Simply put, pallet companies need to have systems that operate on the same level as their customers.

Q: How did the pandemic affect the pallet supply chain?

A: Sawmills and lumber producers curtailed production in anticipation of a slowdown in new home building. That slowdown did not happen, and mills are still catching up. The shortage of lower-grade softwood led many customers to switch to domestic hardwoods and those mills are struggling due to labor shortages. Companies shifted to recycled options, which has strained what is a finite pool. The market is still adjusting, so expect pricing volatility to continue.

Q: How important are sustainability concerns?

A: Most Fortune 500 companies have set carbon emission goals for the next 10 to 20 years. With the prominence of pallets in the supply chain, they will play a key role in lowering emissions, especially the wooden pallet.

A new Environmental Product Declaration shows pallets have the potential to be a carbon-neutral product. Wooden pallets are one of the most recyclable forms of packaging, at a 95% recycling rate. Pallets made with other materials have more difficulty separating materials and recycling. Just because something is recyclable does not mean it is being recycled. Certain pallets only delay the waste stream.

Q: Are pallet types shifting in demand?

A: We are seeing continued preference for wooden pallets. This is due primarily to the sustainability of wooden pallets, flexibility, and cost. A wooden pallet can be constructed to handle any load, while considering environmental and economic impact.

Q: What are the benefits of pallet management services?

A: We call our management services "Total Program Coverage." We analyze your current program and operations and devise a custom program to support your pallet needs nationally. We integrate with your systems to provide on-demand data and reporting. And we conduct annual reviews to ensure your program is meeting expectations.

Q: What should shippers look for in a pallet partner?

A: Look for a high level of customer service and added value through a comprehensive program supported by technology systems and a commitment to environmental sustainability.

Kamps Inc. owns and operates over 30 locations, 3,000 trailers, and has over 150 locations in its nationwide pallet network.

and receivers set sustainability goals, including reducing their carbon footprint or manufacturing/packaging waste, and consumers are paying attention.

"The sustainability trend has encouraged companies to seriously investigate plastic pallets and other reusable solutions as replacements for expendable packaging," Zitzke says. Plastic pallets are considered more sustainable than wood pallets in many respects, even though wood is a renewable resource.

The usage of plastic pallets reduces lumber waste and the amount of emissions and water it takes to manufacture or recycle wood pallets after their limited use.

"All of ORBIS' plastic pallets are fully recyclable at the end of their service life, and many of them are also manufactured with 100% recycled material, such as the Odyssey pallet," Zitzke says. "Several customers request us to reuse their internal plastic scrap in their plastic pallets to achieve their sustainability initiatives."

This strategy also helps reduce pollutants generated during the production of virgin resin, as the recycling process has lower emission output.

"COVID has accelerated this consumer trend and is pushing companies to change the way their supply chain works and the packaging materials they choose," Zitzke says. "Companies are taking this opportunity to come out of the crisis with more sustainable operations and move toward reusable solutions when the cost is justified."

AN INFINITE LIFE CYCLE

iGPS offers pallets that are 100% recyclable, survive more than 100 round trips, and have been in the field for more than one decade. A plastic pallet can contain as much as 98% post-consumer recycled material and can have a useful life of up to 10 years. When the pallet is damaged beyond repair, the plastic can be ground into pellets and reformed into a new unit.

"We call it an infinite life cycle because once the plastic has been

While at the same time ubiquitous and invisible, pallets perform essential functions in the supply chain. That has never been more apparent than during the pandemic.

consumed in the pallet, we can continue to use it forever,” Pepperworth says.

Plastic pallets are also about 20 pounds lighter than the average wood version so each pallet can hold more product. Trucks can move more products in fewer loads, reducing transportation’s greenhouse gas impact.

“Reducing transportation weight and cubing out a trailer has a beneficial impact on customers,” Pepperworth says.

Some major shippers are making the switch to plastic pallets. Costco, for example, announced a plan to transition about 60 million pallets from wood to plastic for its warehouse stores due in part to the lighter weight and reduced damage during handling. The company

has asked its suppliers to consider switching as well.

COVID has also impacted the price of lumber, raising the cost of wooden pallets and making the transition from wood to plastic more economically feasible than in the past.

POOLS AND MANAGED SERVICES

Most large companies use pallets from a pool or a managed services arrangement. Both systems offer lower upfront costs compared to purchasing assets. Users that have a captive or closed-loop system may benefit from owning. Other companies that ship product to a range of destinations outside of their control benefit from paying for use.

Both methods can ensure pallets are available when they’re needed. Visibility into tracking and damage can pinpoint problem areas that lead to product losses.

The major benefits of joining a pallet pool are lower up-front cost investments and easy packaging delivery and tracking, which reduces system downtime due to packaging shortages and storage space requirements.

Experts have called pallets “the industrial equivalent of oxygen.” While ubiquitous and invisible, pallets perform essential functions in the supply chain. That has never been more apparent than during the pandemic when consumers waited at the loading dock for pallets of essential food and supplies to arrive.

While sometimes overlooked, pallets are the unsung stars of the supply chain. As the supply chain embraces automation, high-quality pallets will be critical in ensuring systems operate at maximum efficiency. ■



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Intermodal Meets the Moment

In a supercharged supply chain, intermodal's value grows more evident than ever. These standout companies are contributing to its bright future.

Through changing conditions, behaviors, and preferences in the freight market, the strengths of intermodal as a shipping option have endured over the years, according to Philip Evers, associate professor of supply chain management at the University of Maryland. “The advantages of intermodal are the same ones they’ve always been,” he says. “It’s a relatively low-cost and effective method of shipping and it’s an eco-friendly approach.”

Intermodal—utilizing two or more different modes, usually rail, to convey goods—“is highly secure and takes trucks off the road,” adds James Shefelbine, executive vice president of sales and marketing for Chicago-based PLG Consulting.

“Intermodal optimizes the truck-rail trade-off where shippers get the best of both worlds,” Shefelbine says. “They get the short-distance efficiency of trucks and the long-haul stability and reliability of rail. It can be safer than a traditional truck move, and it provides higher visibility for shippers tracking their shipments. The value proposition is strong.”

Those inherent strengths have helped intermodal weather the challenges of COVID-19, and then rebound when the economic climate in the United States improved.

Intermodal traffic is highly correlated with economic activity, Evers says, and heavy demand for consumer goods, propelled by e-commerce, has bolstered intermodal along with the rest of the freight market. Total intermodal volumes rose 10.5% in the first quarter of 2021 (*see chart, pg. 80*), according to the Intermodal Association of North America, marking its third consecutive quarter of growth.



E-commerce's increasing importance will endure beyond the pandemic—as will its influence on intermodal to keep up with consumer demand, says Rick LaGore, CEO of Indianapolis-based InTek Freight & Logistics.

Many of the products consumers are purchasing via e-commerce are being manufactured overseas and then arriving at U.S. ports. The largest e-commerce players take advantage of intermodal to distribute freight to major cities that have intermodal ramps, notes LaGore.

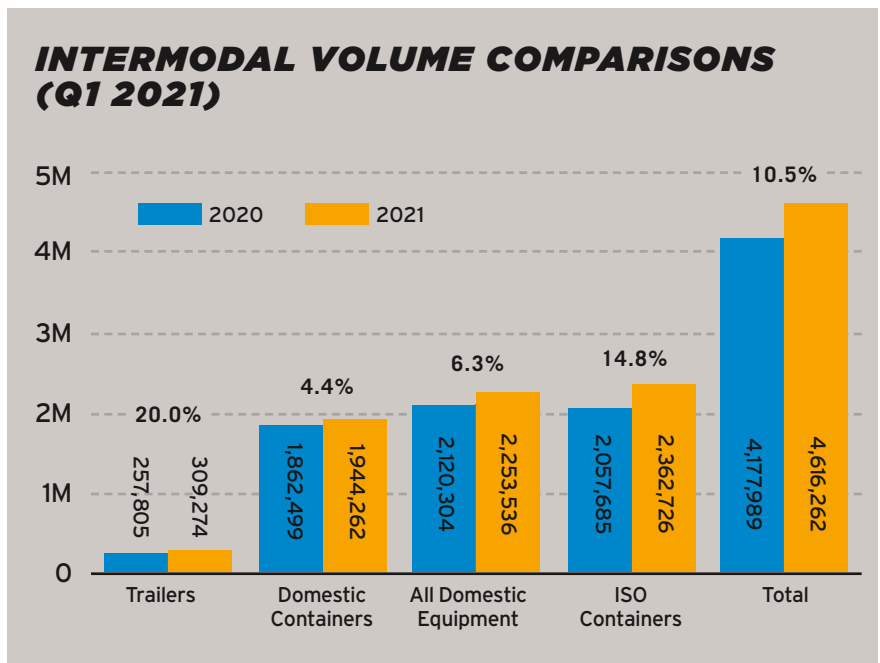
These companies see savings and additional capacity options available to them on the intermodal side, particularly using intermodal in their busiest lanes where they most need additional capacity and flexibility.

“E-commerce companies are using intermodal to move inventory from one location to another in the most efficient manner possible,” says LaGore. Companies that “think outside the box,” he adds, are most likely to benefit from intermodal in the current climate.

The inherent strengths of intermodal have helped it weather the challenges of the pandemic. It is now poised for continued growth.

“Companies that are willing to be flexible in their operations understand the competition isn't about the people they're next to on the store shelves—the competition is about getting to those store shelves,” LaGore says.

The trucking industry's ongoing challenges with long-haul driver availability make intermodal a particularly appealing and welcome alternative, Evers says. One impact of the truck driver shortage is that some carriers are responding to drivers' preferences for shorter routes and more nights spent



at home by cutting back or eliminating long-haul routes.

“A long-term positive for intermodal is taking the long-haul piece out of it for many drivers,” says Evers. “And generally, especially on the long-haul side, any type of driver shortage is a positive for intermodal, assuming rates remain at a reasonable level.”

E-COMMERCE GOLD RUSH

“As fuel becomes more expensive, roads become more congested and populations begin to grow—along with major urban centers—truck drivers become more in demand,” Shefelbine says. “That’s what will drive continued intermodal growth.”

“This will impact the companies who have warehouses serving the e-commerce marketplace in large urban centers with intermodal facilities,” he adds. “Those companies will find significant market growth, because of the way the e-commerce gold rush is affecting those kinds of warehouses and service providers.”

Intermodal infrastructure in the United States is showing positive signs of growing to meet demand. Rail and ports received a “B” and “B-,” respectively, in the 2021 American Society of Civil

Engineers' (ASCE) Report Card for America's Infrastructure, the two highest grades on the report card.

The ASCE points to increased federal and local investments in the rail and port systems as key reasons for their relatively strong grades.

“Right now, rail infrastructure is better than it has ever been in the history of the United States,” Shefelbine says. “And investments in rail infrastructure are continuing.”

For example, ports and port tenants plan to spend \$163 billion between 2021 and 2025, up by more than \$8 billion over the past four years, according to ASCE.

And while intermodal's sustainability component can fly under the radar, Evers says, its eco-friendly quality can be a factor in convincing transportation decision-makers.

“If the alternative is long-haul trucking and the rates are roughly comparable, then a shipper may decide to use intermodal because the sustainability factor tips the scales that way,” says Evers.

While cost and the bottom line benefits will continue to attract companies to intermodal, the sustainability component will only grow in importance, LaGore notes.

“It is the greener method,” he adds.

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Intermodal



“And when the freight is available and there’s a good intermodal lane, then intermodal is the best capacity play, too. Intermodal has a bright future.”

The appeal of intermodal is clear, especially for larger shippers utilizing major urban centers.

“If shippers are trying to manage their costs, maximize efficiency through best practices, reduce capital expenditure, and look for sustainable solutions, then intermodal is a great option right now,” Shefelbine says.

The following standouts in intermodal are helping the market grow while contributing to its bright future.

THE PORT OF BALTIMORE: INTERMODAL PLAYS A CRUCIAL—AND GROWING—ROLE

The Port of Baltimore enjoys a natural appeal to shippers by virtue of its position on the Maryland coast and its proximity and ease of access to a variety of prime shipping destinations.

“The Port of Baltimore is unique because its geographic location as the closest East Coast port to key Midwest markets is a tremendous advantage,” says William Doyle, executive director of the Maryland Port Administration, which

manages the port’s six state-owned, public marine terminals. “Original equipment manufacturers and cargo owners know that Baltimore gets their cargo from point A to point B quicker than other gateways.”

Intermodal is a crucial component of the port’s service to its customers. The port’s marine terminals handle autos, breakbulk, containers, cruises, farm and construction equipment, and forest products. One of the busiest seaports in the United States, the port manages more autos and farm and construction equipment than any other port in the country.

“With two Class A on-dock rail providers, CSX and Norfolk Southern, the Port of Baltimore offers plenty of rail options,” Doyle says. “The Port of Baltimore is also very convenient to the truck market with its location right off busy Interstate 95, and other important highway access points including I-83, I-81, I-76, and I-78. Less than 20 minutes away from Baltimore is Interstate 70, a direct link to the Midwest.

“We have trucks and trains moving cargo as far south as Kentucky, west to Utah, and even north to Maine in some instances,” he adds.

The Port of Baltimore has two Class A on-dock rail providers, CSX and Norfolk Southern, and is located close to I-95 with several other highway access points. The port manages more automobiles and farm and construction equipment than any other port in the United States.

BENEFITS STACK UP

Doyle says a major interstate rail project is in the works that will enhance the Port of Baltimore’s intermodal operations—double stack rail. Baltimore’s 126-year-old Howard Street Tunnel is being reconstructed to accommodate double-stacked container trains to and from the port.

“Baltimore will reach into the Ohio Valley markets and all the way to Chicago with double stack rail,” Doyle says. “Construction will commence later in 2021 and the project will be completed in 2024. It will generate an additional 160,000 containers annually for Baltimore and create thousands of new jobs.

“It will also alleviate the only remaining obstacle to having double stack rail access up and down the eastern seaboard,” he adds.

The Port of Baltimore and Ports America Chesapeake, which operates the port’s Seagirt Marine Terminal, are expeditiously moving forward with

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Building on our legacy.

Intermodal



CenterPoint Properties purchased a 601,261-square-foot building on 31 acres at 3507 Pasadena Freeway in Pasadena, Texas, in February 2021 (left). The Class A building provides rail service by Union Pacific, BNSF, and Kansas City Southern via the PTRA with prime access to regional highways and the Port of Houston's container terminals.

The Baytown Intermodal Center (below) offers direct access to BNSF and Union Pacific rail lines and the storage space to accommodate up to 350 railcars.

projects to reconstruct and reconfigure the container berths.

In addition, the Maryland Port Administration completed the deepening of a second container berth to 50 feet. This will allow Baltimore to handle two ultra-large ships at once while also being able to service two other container ships.

The berth project is part of a \$122.1-million investment, with \$105 million from Ports America, \$10.5 million from the state, and \$6.6 million in federal funding.

Ports America Chesapeake is also investing an additional \$61 million into Seagirt Marine Terminal for additional equipment, infrastructure enhancements, and technology upgrades.

"With dredging completed, four Neo-Panamax cranes will arrive in Baltimore in summer 2021," Doyle says. "Baltimore is moving forward."

CENTERPOINT PROPERTIES: MEETING UNIQUE INTERMODAL NEEDS

CenterPoint Properties, a Chicago-based industrial investment, development, and management firm, has large investments in properties in the country's intermodal hotbeds—spanning from Southern California, the Bay Area, and Seattle to Chicago, Texas, Northern New Jersey/New York, Charleston, Savannah, and Miami—and the expertise to meet the preferences and needs of its tenants, no matter how complex or unique.

"We do a lot of development in markets with rail-served and intermodal assets," says Rives Nolen, senior vice president, investments, for CenterPoint. "It's an important piece of our strategy as we continue to grow our company."



Among the areas where CenterPoint has made heavy investments is Houston, the leading market for direct access to the South and Southwest regions of the United States and one of the top markets for imports and exports to Central and South America.

CenterPoint's interest in the market is based on two factors that are pillars of its investment and development strategy: The company endeavors to own and build assets in top infill markets that have strategic access to ports and large population centers. Houston is the nation's fifth-largest metro area, and its port is No. 1 in total foreign and domestic waterborne tonnage and the sixth-ranked container port by TEUs.

CenterPoint owns four available properties that comprise the 1.2-million-square-foot Baytown Intermodal Center near Houston. The intermodal center can accommodate up to 350 railcars, has rail service by two Class I railroads, and has proximity to the Port of Houston's Bayport and Barbour's Cut terminals. The property is a potential build-to-suit

opportunity in a redevelopment scenario.

"The unusual amount of railcar capacity is a real key to that site's value," Nolen says. "And there are a lot of different things we can do with it."

EQUIPPED FOR INTERMODAL

CenterPoint's intermodal-equipped sites in the region also include a 600,000-plus-square-foot building in Pasadena, Texas, 20 miles from downtown Houston. The Class A building offers a rare combination of rail service by Union Pacific, BNSF, and Kansas City Southern via the Port Terminal Railroad Association, abundant railcar capacity, and strategic port and highway access.

CenterPoint is intent on expanding its existing Houston portfolio of approximately 6.5 million square feet, Nolen says. The company is attracted to the city in part for its robust port infrastructure and sustainable growth.

"As we look at expanding our central region markets, we're focused on investments in markets that are



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Intermodal



Duke Realty leases a 589,362-square-foot, rail-served distribution center (above) in South Dallas to The Shippers Group. The center is located in Prime Pointe, a 3,000-acre industrial park surrounding the Union Pacific Dallas Intermodal Terminal.

Goodyear Tire & Rubber Co. leases a 1.2M-square-foot building at Rickenbacker Global Logistics Park, an air cargo airport, rail intermodal facility, and distribution hub in Columbus, Ohio, from Duke Realty.



experiencing economic and population growth that we believe will drive more demand for industrial real estate in the current environment,” Nolen says.

Another Texas market that CenterPoint has targeted for intermodal-related expansion is the Dallas-Fort Worth area. In particular, the company is looking to invest in properties close to the Dallas-Fort Worth Airport and the AllianceTexas

development, which includes the Fort Worth Alliance Airport and two Class I rail lines.

“It’s an example of a market that’s experiencing a lot of growth and successful development projects,” Nolen says. “There are some great possibilities for us in that area.”

Nolen says CenterPoint’s proven background in intermodal means it is prepared to solve any challenge a client has.

“If the customer needs a specialized facility that involves some type of intermodal capability, we have experience owning, operating, and developing those types of projects,” Nolen says. “We believe if we can help customers solve those kinds of issues, we can create long-term relationships and long-term results.”

DUKE REALTY: INTERMODAL CAPABILITIES HELP CLIENTS THRIVE

By controlling large, shovel-ready sites near key intermodal hubs, Duke Realty, an owner, developer, and manager of industrial properties across the country, can provide invaluable site configuration

Strong demand for consumer goods, propelled by e-commerce, has bolstered intermodal along with the rest of the freight market.

flexibility and a speed-to-market advantage for its clients.

“While not all tenants utilize multiple modes of transportation at their sites, they know having a facility with intermodal capabilities lends to adaptability in their supply chain—making it easier to scale if required and quickly transition their logistics capabilities,” says Chris Burns, executive vice president of the west and central regions for Duke Realty.

Burns says Duke Realty owns facilities in a host of major markets, such as Columbus, Chicago, Dallas, and Savannah, that are adjacent to

intermodal sites. For instance, Duke Realty owns more than four million square feet at the Rickenbacker Global Logistics Park in Columbus with the ability to develop another seven million with partner Capitol Square.

The park is adjacent to the Norfolk Southern intermodal terminal with direct access by rail, air, or truck and has up to a 15-year, 100% tax abatement available. Duke Realty has a new 582,000-square-foot speculative project adjacent to the airport and north of the intermodal terminal with the chance to expand to more than 1.2 million square feet.

“Having a significant presence at Rickenbacker Global Logistics Park gives us direct access to potential opportunities, and better insight into regional demands and customer needs,” Burns says.

Duke Realty excels at serving its clients because of the expertise of its people, a track record of partnering with local officials, and its wide availability of development-ready sites, Burns says.

In a recent development, Duke Realty secured a lease agreement with a large e-commerce retailer for a 1.2-million-square-foot build-to-suit facility on the southwest side of Chicago in Romeoville that provides ready access to a nearby

intermodal facility in Joliet.

“Intermodals are driving demand,” notes Burns. “We need to be flexible and

limited spaces. So, we want to be in front of those opportunities.”

Burns says tenants are taking advantage of better drayage costs, and they view intermodal facilities as a natural complement to their operation with infrastructure already in place and maintained. In some cases, Duke Realty is running rail directly into the building to support a tenant’s need for rail service.

Intermodal also plays a key role in Duke Realty’s long-term sustainability commitments, Burns says.

“Product can be delivered more efficiently over rail with a significantly lower energy footprint than by truck,” Burns says. “By catering to our tenants who utilize intermodal service today and in the future, we are actively growing a more energy-efficient segment of the supply chain.”

Going forward, Duke Realty will continue to emphasize intermodal opportunities.

“Intermodals attract a wide range of users, have the necessary infrastructure, and are located near major population centers,” Burns says. “Duke Realty owns a number

of well-positioned sites near intermodal facilities, and we expect that trend to continue as we look to expand our logistics portfolio.”

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CenterPoint Landing at Oakland Seaport

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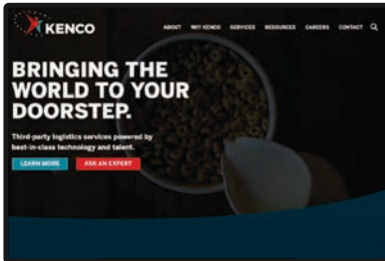
Reimagine What's Possible In Industrial Real Estate
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offer solutions that will help customers efficiently run their businesses. Customers that need access to rail or intermodal transportation are finding

IN THIS SECTION:

3PL - Dedicated Contract Carriage

3PL

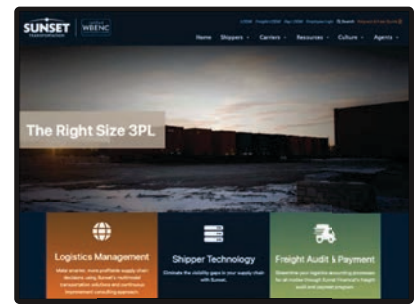


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Adding value to your bottom line? That's the mission of Kenco. For more than 50 years, Kenco has guided some of the most demanding supply chains in the world. Kenco's convergence approach can help you streamline your supply chain and bring a greater return on assets and investments. Kenco invites you to visit this website so that you might get to know its services. Then, contact Kenco so that you might truly understand its unique strategic advantages.

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Sunset Transportation isn't just another 3PL. We are driven by the right-size fit for each business, using all levels of global and domestic supply chain resources and services. Our culture allows customers to feel like family, while offering advanced TMS solutions, reporting, and shipment reliability. Our approach is simple: through analysis of historical shipping data, we identify opportunities for optimization, service improvement, and technology enhancements. All this is done with five promises we make to every customer, every day: savings, visibility, data-driven decisions, continuous improvement, and relationships. Sunset is the right size 3PL for your growing business.



BARCODE/RFID



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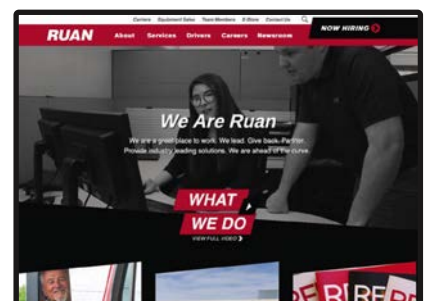
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DEDICATED CONTRACT CARRIAGE

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IN THIS SECTION: Intermodal - Pallets

INTERMODAL



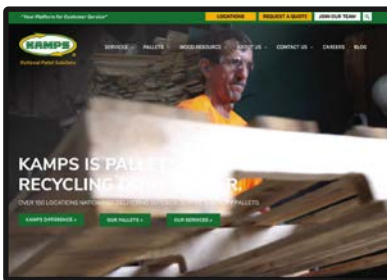
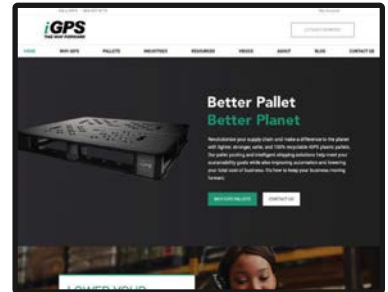
MARYLAND PORT ADMINISTRATION • www.marylandports.com

Located in the nation's third-largest consumer group, the Port of Baltimore has an impressive array of distribution locations, with more on the way. As an import destination from China, the most cost-effective and quickest way to tap this affluent market is by bringing your cargo direct to Baltimore, where you will be greeted with world-class efficiency and customer service. Find out more at www.marylandports.com.

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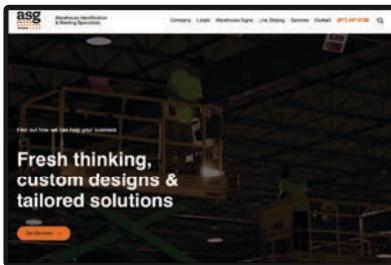
ORBIS CORPORATION • www.orbiscorporation.com

As leading companies continue to drive sustainability in their business, they scrutinize every point of their supply chain, including the packaging used to move their product. ORBIS provides reusable plastic containers, pallets, dunnage, and bulk systems that improve the flow of product all along the supply chain to reduce costs, enhance profitability, and add sustainability.



IN THIS SECTION: Printing Solutions - Site Selection

PRINTING SOLUTIONS



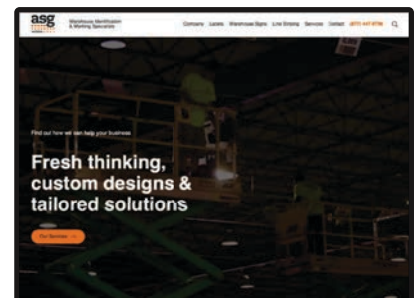
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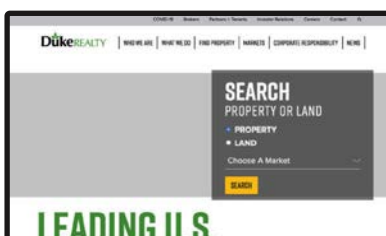
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SITE SELECTION



DUKE REALTY • www.dukerealty.com

Duke Realty Corporation owns and operates approximately 156 million rentable square feet of industrial properties in 20 major U.S. logistics markets. Duke Realty is publicly traded on the NYSE under the symbol DRE and is listed on the S&P 500 Index. The company maintains a Baal rating from Moody's Investor Service and a BBB+ rating from Standard & Poor's Financial Services.

WATSON LAND COMPANY • www.watsonlandcompany.com

Watson Land Company is a developer, owner, and manager of industrial properties throughout southern California. With a legacy spanning more than two centuries,

Watson's dedication to customers is based on delivering functional, high-quality buildings within master-planned centers, coupled with unmatched customer service.

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IN THIS SECTION:
TMS

TMS



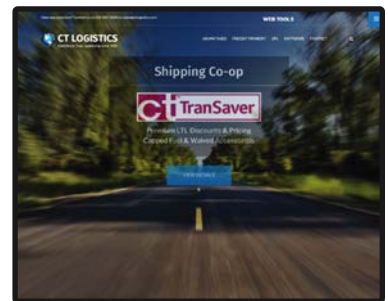
AR TRAFFIC CONSULTANTS • www.artraffic.com

AR Traffic has been providing shippers with advanced transportation management software and third-party logistics services since 1964. All its products and services are designed to improve your efficiency, accuracy, record-keeping, control and auditability as well as to lower your freight costs. For a free study to show how you can cut costs, improve customer service, and streamline your business, visit the website today.

CT LOGISTICS • www.ctlogistics.com

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CT's Business Intelligence platform provides global spend visibility and data analysis using SOCII and ISO 9001:2015 certified processes. Services also include: Shipment Execution, Bid Management, Shipment Planning and Execution Software, and Professional Services for consulting and advising.



FORTIGO • www.fortigo.com

Fortigo's team of experts specializes in logistics optimization and enterprise web-based software. For companies seeking to reduce costs, improve customer satisfaction, and increase profitability, Fortigo automates, optimizes, and audits logistics decisions. Fortigo plugs into established supply chain applications and provides rapid return on investment by optimizing and deploying closed-loop logistics processes, minimizing ship-to-order times and streamlining collaboration with logistics providers.

nVISION GLOBAL TECHNOLOGY • www.nvisionglobal.com

nVision Global is an industry leader in providing configurable logistics services and solutions for customers around the world, enabling them to optimize their supply chain and gain access to critical data. We offer a full suite of logistics services and solutions that allow for end to end shipment and supply chain management and visibility. Our solutions include a global, multi-modal TMS application, international freight audit and payment, loss & damage/overcharge/service failure claims management, as well as industry leading logistics analysis solutions.



IN THIS SECTION: TMS

TMS



ODYSSEY LOGISTICS & TECHNOLOGY • www.odysseylogistics.com

Odyssey Logistics & Technology Corporation (Odyssey) combines deep industry expertise with leading technology to provide multimodal logistics management services to the chemical industry and other process manufacturers. Odyssey enables clients to outsource any part of their logistics processes to achieve savings through reduced transportation and infrastructure costs, measurable customer service and process improvements, and improved data quality and management. Odyssey is a leader in intermodal with expertise in liquid food, chemicals, and metals transport.

PRINCETON TMX • www.princetontmx.com

Princeton TMX offers a transportation management solution utilizing the most modern software available. It empowers shippers to focus their resources on exceptions, while providing management with the tools to better analyze and minimize transportation expenses. Princeton TMX products are offered as a Software as a Service (SaaS) solution. These solutions are integrated with customers' systems to create a seamless experience for users. Princeton TMX's software modules are configurable to meet customers' specific business requirements.

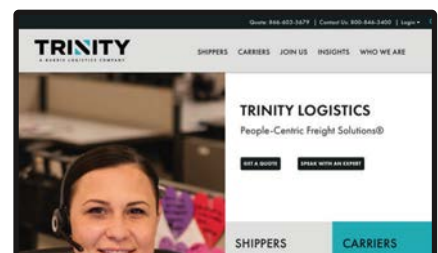


TRANSPORTGISTICS • www.transportgistics.com

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

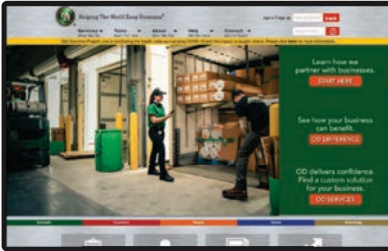
TRINITY LOGISTICS • www.trinitylogistics.com

Trinity Logistics is a team-member-owned leading third-party logistics company specializing in freight arrangement and supply chain solutions. Trinity can help you gain control and visibility of your supply chain, reduce costs, improve performance, and increase efficiency. With 35 years of experience and a relationship-driven team, Trinity is the 3PL company you can rely on.



IN THIS SECTION:
Trucking - Warehousing

TRUCKING



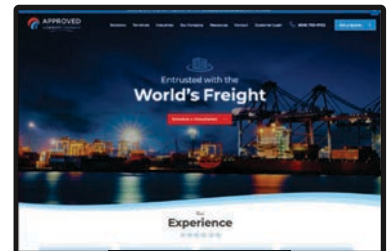
OLD DOMINION FREIGHT LINE • www.odfl.com

Old Dominion Freight Line is a less-than-truckload carrier providing complete nationwide service within the continental United States. Through its four product groups, OD-Domestic, OD-Expedited, OD-Global, and OD-Technology, the company offers an array of innovative products and services to, from, and between North America, Central America, South America, and the Far East. The company also offers a broad range of expedited and logistical services in both domestic and global markets.

WAREHOUSING

APPROVED FREIGHT FORWARDERS • www.approvedforwarders.com

Since 1991, Approved has been dedicated to the unique shipping needs of the Hawaii and Guam trades, and provides freight forwarding throughout the mainland U.S. Approved accommodates all types of commodities and all sizes of freight. Its highly trained logistics experts use advanced technology to tailor shipping solutions that fit your specific requirements. Approved works hard to ensure that your shipment arrives on time and intact, and keeps you updated every step of the way. To learn more about Approved's freight and logistics solutions, sailing schedules, and competitive rates, visit the website.



ATLANTA BONDED WAREHOUSE • www.atlantabonded.com

Atlanta Bonded Warehouse (ABW) has been providing public and contract food-grade, temperature controlled distribution services for 70 years. ABW is a leader in providing integrated asset-based logistics solutions for the food, pharmaceutical, household durables, and CPG industries. Our goal is total customer satisfaction through continuous innovation in technology and in best practices by focusing on teamwork, integrity, and accountability, all in a safe working environment.



HUB GROUP • www.hubgroup.com

Hub's extensive service network—built over many years—enables it to provide innovative transportation solutions that are versatile, flexible, and designed to deliver maximum efficiency. With this advantage, Hub Group is able to collaborate with customers daily to help them meet their transportation challenges. With intermodal, highway, and logistics transportation offerings, the Hub Network is your single source—coast to coast, border to border. Visit the website to learn what Hub can do for you.



IN THIS SECTION:
Warehousing

WAREHOUSING



LYNDEN • www.lynden.com

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

MAINFREIGHT • www.mainfreight.com

Mainfreight is a one-stop shop for your global supply chain and logistics needs, offering international and domestic freight transportation, managed warehousing, and everything in between. With teams and branches across The Americas, Asia, Australia, Europe, and New Zealand, Mainfreight's network of passionate team members will work together to design an effective supply chain solution to suit your business needs.



PHOENIX LOGISTICS • www.phoenix3pl.com

Phoenix Logistics listens carefully to your logistics needs and responds with innovative solutions. By implementing technology, materials handling equipment, and specialized personnel in a perfectly matched and ideally located facility, Phoenix provides customized service programs specifically fulfilling the requirements of each client. The company's seasoned management group is trained in handling and distributing various product lines. For more than 30 years, Phoenix has provided comprehensive, cost-effective inventory management and value-added service programs for most consumer product industries.

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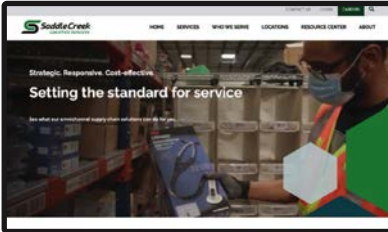
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IN THIS SECTION:

Warehousing - Wireless/Mobile Technology

WAREHOUSING

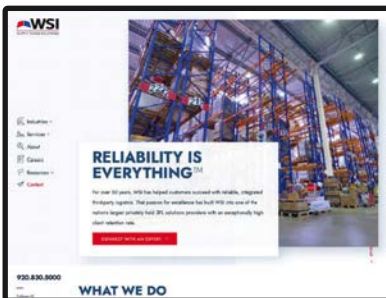
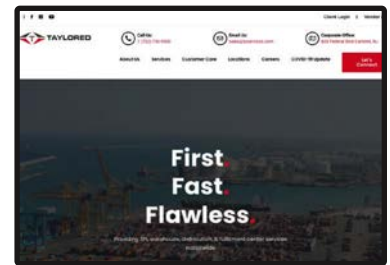


SADDLE CREEK LOGISTICS SERVICES • www.sclogistics.com

Saddle Creek is an omnichannel supply chain solutions company providing a variety of integrated logistics services, including warehousing, fulfillment and transportation. Our custom solutions leverage advanced operational methods and sophisticated technologies to help retailers, manufacturers and e-commerce companies get products where they need to be quickly, cost-effectively and seamlessly. For more information, visit www.sclogistics.com.

TAYLORED SERVICES • www.tayloredservices.com

Since 1992, Taylored Services has focused on high performance, continuous growth, and a strong customer focused ideology. We provide coast-to-coast service with 4,400,000 square feet of warehouse space in 14 strategic locations. Our services include omnichannel warehousing and distribution, pick and pack unit level fulfillment, e-commerce distribution, value added services, innovative technology solutions, transloading, port drayage, and trailer storage and rental. Visit www.tayloredservices.com or contact sales@tpservices.com



WSI (WAREHOUSE SPECIALISTS, LLC) • www.wsinc.com

Reliability is everything. At WSI, that has been our approach to integrated logistics and supply chain solutions for over 50 years. Our promise of Condition, Count & Time ensures accurate, timely, and sound performance—every time. Recognized as one of the top 3PL providers in North America, WSI delivers custom solutions for warehousing/distribution, fulfillment, transportation, import/export, information technology, and customer support services. Depend on WSI for increased efficiency, reduced costs, and absolute reliability.

WIRELESS/MOBILE TECHNOLOGY

ENERGY ELECTRONICS • www.energyelectronicsllc.com

Energy Electronics is America's premier distributor of corporate communications devices. We facilitate wholesale distribution of mobile devices designed to solve corporate logistic issues. We've perfected a streamlined system of operations that enables us to move product quickly and efficiently. Our quality of service has helped us cultivate relationships with some of the biggest manufacturers in the business, and we leverage our connections to directly benefit our customers.



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Supply Chain Insights

whitepapers



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Procuring truckload capacity is unique compared to other commodities, and the recent spikes in truckload shipping costs are bringing even more attention to budgets and operations. Given all the uncertainties that still exist in the marketplace, how can shippers successfully plan and execute on a transportation budget? Download this free e-book to find strategies for balancing predictability and flexibility in your transportation spending.

podcast



Mario Rivera

Let the Supply Chain Innovation Games Begin

GUEST: Mario Rivera, Vice President of Development and Innovation, ID Logistics

bit.ly/IDLogsMar21POD

The evolution of the logistics sector depends on innovations in operations, communication, and technology. What if your company could develop an in-house innovation incubator to generate ideas and bring them to market? ID Logistics created an Innovation Games program, which challenges the third-party logistics provider to find the next big idea. Mario Rivera at ID Logistics discusses what happens when the games begin.



[IN FOCUS]

SPOTLIGHT

Cargo Security

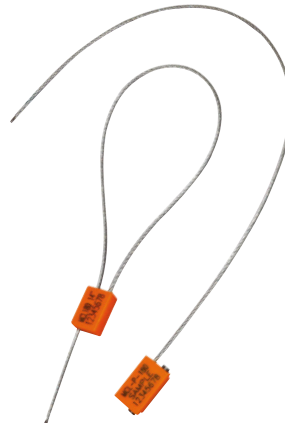
> **GT I210 Solution:** ORBCOMM's system combines asset tracking capabilities with cargo and door sensors. The trailer tracking device identifies door opens, route deviations, and loaded/unloaded status. Real-time alarms protect cargo from theft and tampering. The solution includes a customizable application with dashboards and analytics.



> **Tive Solo 5G:** The multi-sensor tracker from Tive provides hyper-accurate location and condition data for in-transit shipments. It offers shock and light monitoring with real-time alerts that help logistics professionals actively manage shipments to avoid preventable delays, damage, and theft. Light sensors let users know if a shipment has been opened—and if so, when and where.

> **Labelmaster Cable Security Seals:**

These heavy-duty, self-locking steel cable seals secure railcars, cargo doors, gates, drums, and hazmat shipping containers. Labelmaster's cable seals provide fast and secure locking capabilities in a variety of materials and strengths, including C-TPAT-compliant options. They come in a range of lengths and colors with custom marking, numbering, and colors available upon request.



> **SC1302 Sensor:** The smart device from CalAmp provides granular visibility for the safe transport of COVID-19 vaccines and other pharmaceuticals and perishables, as well as electronics and high-value shipments. The environmental sensor, which can monitor temperatures as low as -4 degrees F, integrates with CalAmp's SC iOn Supply Chain Visibility software solution for end-to-end monitoring.

SPOTLIGHT



> **BlackBerry Radar:** This end-to-end asset tracking and monitoring solution provides near-real-time information about trailer, chassis, and container fleets. Identifying unauthorized use, it provides up to five sensor readings from one device, including container on/off or door open/close, location, and mileage. It can communicate to additional wireless sensors for visibility to the status and security of assets.



> **IntelliScan Image Capture and Retrieval:** Spireon's cargo sensing technology complements its Intelligent Trailer Management platform to provide actionable intelligence on trailer assets. The solution can detect cargo load shift before doors open. It minimizes cargo damage by detecting improper loading and also helps with the recovery of stolen cargo with timestamped documentation.

> **SEAFORCE X007 Bar Seals:** The steel core bar protects and secures shipping containers, truck trailers, and railcars. Its transparent plastic cover provides an anti-tampering visual indication. Manufactured by American Seals, the product has a two-steel-pin system for locking and incorporates additional protecting features.



> **Varcode Smart Tag:** By combining temperature measurement into the data value of the barcode, Varcode's low-cost solution protects the safety of products in the cold chain. The Smart Tag triggers a value change in the barcode if any of the multiple pre-set temperature events occur. It can be digitally read by standard barcode readers or by iOS and Android devices.



[IN FOCUS]

INBRIEF

New Services and Solutions

>TECHNOLOGY



> The Gantry Robotic Intelligent Piece Picker, also known as GRIPP, from **Inther**, can pick from, as well as put pieces into, compartmentalized totes. Equipped with a customizable gripper, the machine can process up to 1,200 pieces per hour.

> **Avetta**, a provider of supply chain risk management software, added an intelligent supplier classification tool to the Avetta Connect platform to better pair different supplier types to safety and certification requirements. The solution streamlines supplier onboarding and adds more service levels.

> **Blume Global**, a provider of digital supply chain solutions, introduced Blume Maps, a digital twin of the world's supply chain. Blume collected data on more than 1.5 million global locations and put that data together with dynamic scheduling and routing information to give shippers a map view of the supply chain world.

> **Woodland Group** launched rail freight services at iPort Rail in Doncaster, UK, near its recently opened 195,000-square-foot fulfillment and distribution facility. The service moves containers between the ports of Felixstowe and Southampton with further services to London Gateway and Immingham to follow.



> **NEXT Trucking** launched an online portal to streamline and expedite communications between the company and its shipper customers. The NEXT Shipper Portal lets shippers monitor, gather data, download reports, and take action on every phase of their shipments.

> Omnichannel retailers and online sellers can better manage the complexities of e-commerce delivery, exchange, and returns with a joint offering from **Inmar Intelligence** and **Convey**. The solution combines Inmar's returns management platform with Convey's delivery experience management technology to provide end-to-end visibility.

> **Loadsmart** introduced a mode optimization capability to offer multiple rates for a single full truckload (FTL)

shipment. The update lets shippers select the most cost effective and environmentally sustainable modes for FTL shipments.

> Logistics technology platform **Web Integrated Network (WIN)** established itself as a standalone entity from Odyssey Logistics & Technology Corporation with the appointment of its own executive team. WIN provides shippers with neutral technology solutions to execute and monitor shipments and to streamline workflows.

>TRANSPORTATION

> **MSC** introduced an intermodal solution between Asia and Europe. The new offering combines both sea and rail service departing from China, Korea, and Japan to Europe, via Vladivostok and

Vostochniy with further feeder connections from St. Petersburg.

> **OOCL** made a change to its Atlantic Mediterranean Express service, replacing La Spezia with Livorno, Italy, as a port call starting in May 2021.

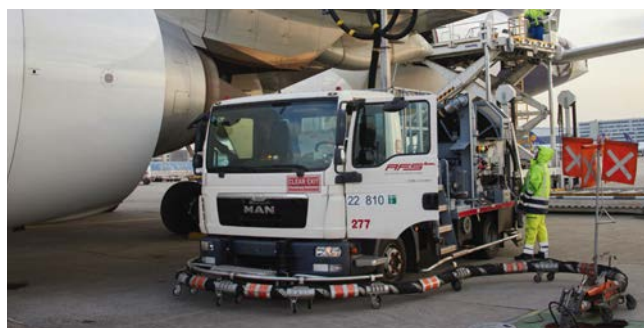
>PRODUCTS

> Lite Foam, a new dunnage material offering from **ORBIS**, protects lightweight parts during transit, assembly, and storage. Composed of extruded polypropylene, Lite Foam's uniform strength eliminates the ribbing effect seen in some lightweight dunnage materials.



> **OneCharge** launched two series of lithium industrial batteries: American Standard and 4500 Pallet Jack. The American Standard battery supports a wide range of materials handling applications while the 4500 Pallet Jack series powers electric pallet jacks.

> **CEVA Logistics** introduced two air cargo services: its new SKYCAPACITY program, which provides global air cargo capacity, and its new premium Time Critical Solution, which provides custom, guaranteed transport for time-critical, no-failure shipments.



> **DB Schenker** and **Lufthansa Cargo** started regular carbon-dioxide-neutral cargo flights between Frankfurt and Shanghai. The weekly flights run on sustainable aviation fuel, which is produced mainly from biomass waste, such as used vegetable and cooking oils. When burned in the engine, the same amount of carbon dioxide is released which was previously removed from the atmosphere during the original growth of the plants.

>SERVICES

> **SEKO Logistics** opened regional distribution hubs on the U.S. East Coast to support growth in Baltimore and Charlotte. Its new Baltimore operation offers more than 160,000 square feet of warehouse space.

> **3PL Circle Logistics** now provides expedited air transport. Through its network of commercial and charter air carriers, Circle Logistics offers air service for small parcel cargo of up to 200 pounds, forwarded from any origin to any destination in the domestic United States.



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Logistics Events 2021

Connect with industry peers, join thought-provoking discussions, and discover the future of supply chain.



**JAN
25-27,
2022**

LAS VEGAS, NV

Manifest 2022

manife.st

Discover the future of logistics technology and the players transforming the industry. Explore thought-provoking topics and networking opportunities to help you stay ahead of the curve.

VIRTUAL

JUN 8-10, 2021

GS1 Connect

gs1connect.gs1us.org

Live-streamed and on-demand content focuses on adapting to supply chain and e-commerce challenges, with tracks covering healthcare, grocery, retail, and technology. Industry leaders share success stories and how they solve specific challenges. The expanded program features a pitch competition, discussion groups, and virtual classroom.

JUN 17, 2021

IGD Supply Chain Summit

bit.ly/IDGSummit

More than ever, supply chains determine who wins in food and grocery. Explore how supply chains are developing new capabilities to better serve customers in those sectors and drive growth. Hear first-hand examples of success, how to address e-commerce challenges, the shift to a contactless environment, and more.

IN PERSON

JUNE 6-8, 2021
ST. LOUIS, MO

TCA Safety & Security Meeting

bit.ly/TruckloadEvent

The Truckload Carriers Association brings trucking safety professionals together to share ideas to make businesses

and roads safer. Special sessions draw from the knowledge of attendees to solve common safety and human-resource problems. Topics include workers' compensation, employee-employer communication, and hiring procedures.

JULY 16-17, 2021
WAYNE, IN

Expedite Expo

expediteexpo.com

Learn about the latest expedited trucking industry news, equipment, career opportunities, and products geared toward owner-operators and drivers of medium-duty and heavy-duty trucks. Attend workshops with advice on how to spec a truck, choose the right carrier, reduce costs, improve profits, and save time. There's something for every type of industry professional, from beginners to managers and chief executive officers.

AUG 17-20, 2021
ORLANDO, FL

Link: The Retail Supply Chain Conference

bit.ly/LinkConference

Get together with top executives in the retail supply chain to network and learn about the latest in retail. This forum addresses challenges with retailer breakouts and roundtables, industry executive general sessions, executive insights, and a bustling expo experience, so you can take back fresh ideas and best practices to your company.

SEPT 13-17, 2021
LONDON, ENGLAND

London International Shipping Week

bit.ly/LondonShipping

This global shipping and maritime event offers sessions and networking opportunities for leaders across all sectors. High-level government and shipping leaders explore how the shipping industry can balance recovery with mounting pressure and opportunities. The key drivers of trade, finance, technology, and people are highlighted, backed by the principles of environment, social responsibility, and governance.

SEPT 19-22, 2021
ATLANTA, GA

CSCMP Edge

cscmpedge.org

The Council of Supply Chain Management Professionals conference supports the supply chain management community by fostering relationships and building careers through education, professional development, and networking. Curate your own agenda with 22 dedicated tracks and more than 120 sessions spanning the end-to-end supply chain.

SEPT 25-28, 2021
LAS VEGAS, NV

Truckload 2021

truckload2021.com

Attend truckload-specific educational sessions with industry experts, insightful panel discussions, and engaging

keynotes. Take advantage of dozens of unique networking opportunities with trucking's most engaged leaders as well as dedicated exhibit hours to learn about the latest products and technology for your fleet.

SEPT 28-30, 2021
LAS VEGAS, NV

RLA Conference and Expo

rla.org/event/125

The Reverse Logistics Association presents industry thought leaders who discuss how to navigate the demanding world of reverse logistics, especially during these challenging times. Take part in powerful keynotes, content-driven panel discussions, and an ample number of networking opportunities.

OCT 26-28, 2021
MIAMI, FL

Air Cargo Americas

bit.ly/AirCargoEvent

Air Cargo Americas gathers executives from all sectors of the aviation and logistics sectors to exchange views and experiences to enhance the growth of the cargo industry. Topics include security, regional consolidation, manufacturer and shipper needs in high-growth cargo, trade facilitation, service quality, responding to market changes, and controlling costs while streamlining customer service.

These events were scheduled to proceed as of press time.

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