

SPECIAL EDITION

**2021
LOGISTICS
PLANNER**

inbound logistics

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JANUARY 2021

THE MAGAZINE FOR DEMAND-DRIVEN ENTERPRISES



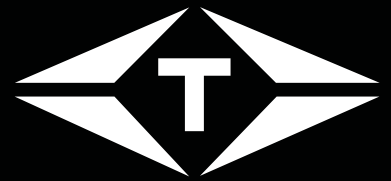
137
TIPS FOR A
FULLY CHARGED
SUPPLY CHAIN

Taylored Fulfillment Services Acquires the US Operations of Toll Global Logistics

Taylored Fulfillment Services, a national leader in distribution, fulfillment, eCommerce and warehousing, has acquired the US operations of Toll Global Logistics, the \$8.7 billion Australian logistics company. The deal triples the company's footprint in key distribution metros while boosting Taylored's position as a Top 100 3PL provider in the US.

"We pride ourselves on being growth oriented, performance driven, and customer focused. Our mission is to service our customers by leveraging our logistics expertise, continued investment in technology, and a network of strategically located facilities to bring down our customers' costs and shorten their delivery times in this rapidly escalating direct to consumer retail environment."

Jim DeVeau, President and CEO Taylored Fulfillment Services



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Info SNACKS

BITE SIZED SUPPLY CHAIN/LOGISTICS INFORMATION

“With all the stress we’re under, our teams still show up every day. They are completely committed to the purpose we are trying to serve in the world.”

—Jessica Tyler, President, American Airlines Cargo (see *LeaderShip*, p. 28)

BACK TO WORK

- **68%** of companies that furloughed or laid off employees during the pandemic say they will backfill eliminated roles, despite 40% saying that hiring freezes were their most important pandemic cost-saving measure.
- **87%** of respondents who say they will backfill eliminated roles will do so within one year, and 62% expect to do so in less than six months.

SOURCE: ADECCO GROUP, 2021 COMPENSATION AND WORKFORCE TRENDS SURVEY



TOO TIRED TO TIE YOUR SHOES?

Nike has your back. The athletic shoe maker has launched the Air Jordan XI model featuring a self-lacing technology known as Adapt. Wearers control the shoe by Bluetooth using an app. They can change how the sneakers fit by adjusting the laces, and they can control the shoe’s color scheme by changing the colors of the flashing buttons on the midsole. The cost: \$500/pair.

TROOP SUPPLY CHAIN



Girl Scouts of Tropical Florida and 3PL Ryder System created a new supply chain patch program exclusively for girls K-12 across the country. The program, called “Girl Scout Cookies and the Supply Chain,” teaches Girl Scouts how supply chain management impacts how and when products arrive in stores while inspiring girls to see themselves working in the industry in the future. Girl Scouts earned the patch on December 12, 2020, as part of a virtual event showing how supply chains work, including that of the world’s largest girl-run business—Girl Scout Cookies.



Cyber INSECURITY

\$1 TRILLION+

Total global losses from cybercrime.

\$3.86 MILLION

Average total cost of a data breach.

419 PER MINUTE

The rate of discovered cyberthreats in Q2 2020, a 12% increase over Q1 2020.

\$178,254

Average ransom payment in Q2 2020, an increase of 60% over the previous quarter.

44%

of customers say they would stop buying from a company that fell victim to a cybercrime.

70%

of enterprises say cybersecurity is among the main spending trends of their IT budgets. Only analytics ranks higher (75%).

SOURCE: NORDVPN TEAMS SURVEY

Walmart Takes the Wheel

After working with startup Gatik on a delivery pilot for the past 18 months, Walmart says it will use fully autonomous box trucks to make deliveries in Arkansas starting in 2021. Then, in 2022, the companies plan to remove the safety driver from the trucks.



CONTENTS

JANUARY 2021 | VOL. 41 | NO. 1



112

137 TIPS FOR A FULLY CHARGED SUPPLY CHAIN

The ultimate list of tips for juicing up your supply chain to full power in 2021 and beyond.



166

IoT, AI, ML: KEEPING INNOVATION IN SIGHT

Leaders set their sights on the Internet of Things, artificial intelligence, and machine learning to enhance visibility, cut costs, and power growth.



148

3PL WAREHOUSING GETS IN THE ZONE

Working side by side, shippers and third-party logistics providers team up to take on warehousing challenges as they navigate disruption and new investments.

156

TRUCKING RELATIONSHIPS: IN IT FOR THE LONG HAUL

The pandemic is testing shipper-carrier partnerships in new and different ways. Here's what transportation partners are doing to keep their relationships healthy for the long haul.

174

UNCORKING LAST-MILE BOTTLENECKS

Shippers can get backed up trying to move goods to consumers' doorsteps quickly and safely. These last-mile innovations keep a steady stream of shipments flowing.

Keeping shipper-carrier relationships rolling for the long haul

156



130

What's in store for 2021?

130

11 SUPPLY CHAIN PREDICTIONS FOR 2021

Businesses got through 2020 with creative pivots and adjustments, but what comes next? Experts weigh in on major trends for the year ahead.

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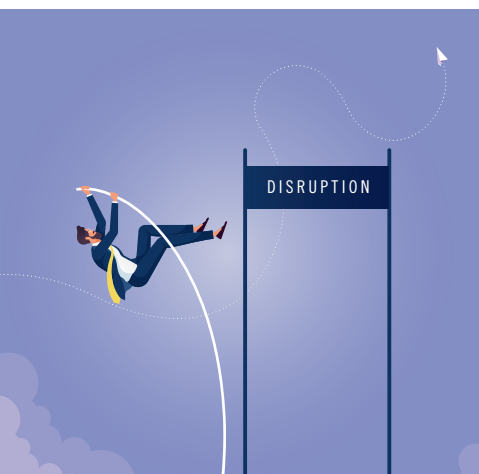
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CONTENTS

JANUARY 2021 | VOL. 41 | NO. 1



180

LOGISTICS CHALLENGES: SMALL BUSINESSES CLEAR THE BAR

These agile small to mid-sized businesses picked up the pace to vault over supply chain challenges, including a pandemic.



186

REVERSE LOGISTICS: IT'S ALL COMING BACK TO ME NOW

With more consumers shopping online than ever before, retailers need to hone their reverse logistics strategies to recover maximum value when the first sale doesn't stick.

192

EVERYTHING'S COMING UP ROSES

As soon as a flower is picked at the farm, floral logistics blooms into a complex arrangement of proper packaging, refrigeration, and speed—especially on holidays like Valentine's Day.



201

COVID-19 RESOURCES AND RECOVERY STRATEGIES

Expert advice on how supply chain leaders can continue to rise above challenges by reimagining peak season, strengthening cold chain distribution, and even collaborating with competitors.



216

3 UNDERREPORTED TRENDS THAT WILL ACCELERATE RESHORING

Thomas research shows an increase in the number of manufacturers that want to bring production back to the United States. These trends will help you capitalize on the opportunity.

223

THE NEW (AB)NORMAL: RESHAPING BUSINESS AND SUPPLY CHAIN STRATEGY BEYOND COVID-19

Read an excerpt from MIT Professor Yossi Sheffi's latest book for a glimpse at what businesses have done during the chaos of the pandemic and what they are likely to do in the future—not only to survive the virus, but thrive afterward.



1950 - 2020

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1961

Kenco's Material Handling Service gets its start as a forklift dealership.

1966

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Kenco expands its presence across the U.S., becoming a national provider.

1987

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1999

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2015

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2010

Kenco launches Material Handling Equipment National Fleet Services.

2019

Kenco expands Innovation Labs to 10,000 square foot warehouse to accelerate the creation of innovative customer solutions.

2012

Kenco is certified as a woman-owned business by WBENC, making it the largest woman-owned 3PL in the U.S.

2020

Kenco launches proprietary technologies including Da Vinci AI advanced analytics and Kenco STARR, Transportation Management Software.



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visit www.KencoGroup.com or call [1-800-758-3289](tel:1-800-758-3289) to speak with a supply chain expert

CONTENTS

JANUARY 2021 | VOL. 41 | NO. 1



240 WINTER READING GUIDE

Delve into these logistics reads to learn about revitalizing retail, the inner workings of supermarkets, and a playbook for competing in a digital-first environment.



248 BEHIND THE SCENES OF TODAY'S LEADING SUPPLY CHAINS

We pulled back the curtain on the best supply chain practices, including Target's smart pick-and-pack strategy and how Boeing lowers costs by salvaging thousands of used parts.



275 LISTEN UP! 12 ESSENTIAL PODCASTS FROM *INBOUND LOGISTICS*

Future-proof your operations, jump e-commerce hurdles, and perfect your digital transformation strategy by tuning into these episodes from our extensive library of discussions with today's leaders in logistics.

278 10 MOST READ // ARTICLES OF 2020

From imagining a workforce of the future to working up an appetite for alternative food packaging, take a look back at the *Inbound Logistics* content that got readers buzzing in 2020.



INPRACTICE

28 LEADERSHIP

Jessica Tyler learned during her early career as a teacher that the best way to help people reach their potential is to have a relationship with them. This shapes her open-book leadership style as president of cargo and vice president of excellence at American Airlines.



30 READER PROFILE

In her previous role managing supplier relationships at Starbucks, Sylvia Wilks learned what good customer service really looks like. Now that she supplies customers at TireHub, she knows how to meet their expectations and build the national tire distributor's customer-centric culture.

253 DC SOLUTIONS

National plumbing wholesaler Legend Valve shifted to automated order management using collaborative mobile robots, increasing pick rates, improving same-day shipping, and reducing warehouse employee fatigue.

257 IT TOOLKIT

Consumer goods company SerVaas Laboratories, which produces Bar Keepers Friend cleaning products, tripled the size of its second production shift to fill spikes in orders during the pandemic by using business intelligence solutions from data platform consultancy PowerPivotPro.



261 E-TALES

When sales projections went out the doggy door, all-natural pet food manufacturer The Honest Kitchen used its omnichannel logistics strategy to not only meet demand for its surging e-commerce volumes, but fill a record number of orders.

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14	15	16	17	18	19	20
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28	29	30	1	2	3	4
5	6	7	8	9	10	11



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CONTENTS

JANUARY 2021 | VOL. 41 | NO. 1

GOOD QUESTION

If you were writing a book on the supply chain in 2020, what would you call it?

16

INSIGHT

12 CHECKING IN WITH THE PUBLISHER

From a modest beginning

14 CHECKING IN WITH THE EDITOR

A valid question

20 DIALOG

22 10 TIPS

Optimizing LTL shipping

55 SPONSORED KNOWLEDGE BASE

- Data management—vital today...56
- Is the logistics sector ready for the COVID-19 vaccine?...57
- Bringing transportation in sync with the world...58
- Inventory management: Two key indicators to improve warehouse operations...59
- Pandemic spurs accelerated investment in automation, digital technologies...60
- What Formula One can teach us about the RFP process...62

64 SPONSORED THOUGHT LEADERS

- Agility, data, and no-code: Three trends for the future...65
- Scaling SCM ecosystems—boardroom insights...66
- Build supply chain resiliency with digital transformation...67

- Three trends driving supply chain efficacy in 2021...68
- Outsourcing helps close IT gaps and meet milestones...69
- Converging order and logistics management on one platform...70
- New directions in U.S.-Mexico trade and logistics...71
- E-commerce trends drive automation initiatives...72
- Managing transitions effectively to enhance project success...73

74 SPONSORED CUSTOM CONTENT

- Accelerating innovation to meet supply chain challenges...74
- Helping a 3PL derive insights from data with real-time analytics...75

76 REVERSE LOGISTICS

Achieving a sustainable returns program

78 LEAN SUPPLY CHAIN

Professional education: Time to pay it forward

80 SMART MOVES

Crafting a notable job title

82 VIEWPOINT

Rail price controls? Ridicule the thought

84 IT MATTERS

Building coherent enterprise architecture

86 LOGISTICS MANAGEMENT

Five steps to process improvement

88 ECO DEV

How the National Freight Strategic Plan can benefit shippers

90 E-COMMERCE

Revisiting brand management policies

92 SC SECURITY

How ransomware kidnaps supply chains

94 COVID RECOVERY

Disruption reinvents the supply chain

96 GREEN LANDSCAPE

Healthier planet, healthier bottom line

98 3PL LINE

FTL vs. LTL: What's the difference?

268



New LED light for trailers and more innovations

101 SPONSORED SOLVED

- 3PL outsourcing beyond the initial goals...102
- Mode shift to eliminate supply chain disruption...103
- Solutions for the unprecedented...104
- Getting crafty with supply chain solutions...105
- Using artificial intelligence to increase forklift safety...106
- Retail optimization through a revamped network...107
- Partnering with a nonprofit to provide COVID-19 relief to the Navajo Nation...108
- Warehouse safety best practices: building a program...109
- Partnership provides e-commerce efficiencies for retailers...110

INFOCUS

1 INFO SNACKS

24 VERTICAL FOCUS: PERSONAL CARE PRODUCTS & COSMETICS

32 NOTED

40 TAKEAWAYS

268 IN BRIEF

INFO

264 SUPPLY CHAIN INSIGHTS

280 CALENDAR

284 SUPPLY CHAIN SOLUTIONS

286 RESOURCE CENTER



24

Cosmetics retailers revamp fulfillment

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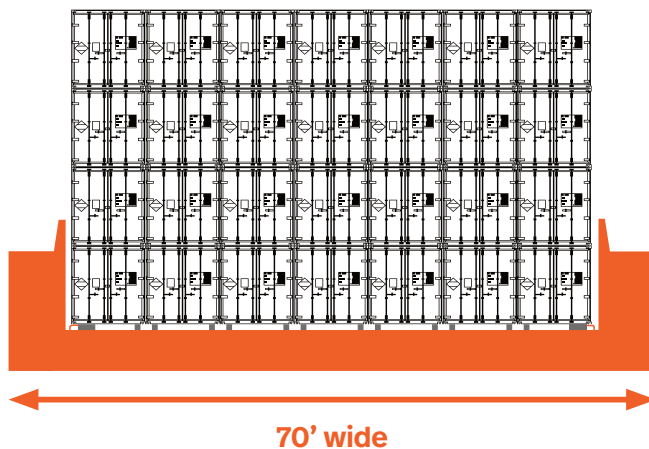
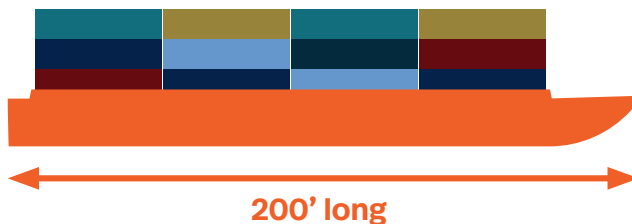
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MORE NEWS ONLINE



PROTECT YOUR SUPPLY CHAIN FROM CYBERATTACKS

Supply chains have been stretched to their limits by COVID-19 lockdowns and consumer demand shifts. Now, they face a growing threat from hackers, most recently via ransomware. Follow these guidelines to keep your supply chain safe and secure.

bit.ly/SCCybersecurity



GET SMART WITH ENERGY MANAGEMENT

Energy management offers creative ways to optimize your supply chain by fostering resilience in the face of power outages and addressing customer demand for sustainable practices. A smart energy strategy can also increase revenue.

bit.ly/EnergySupplyChain



OPPORTUNITIES IN FLEET ELECTRIFICATION

Electrification is driving transportation to become more sustainable, and offers opportunities to advance efficiency, lower costs, and improve driver safety. With vehicle inventory fast approaching, these tips can help you weigh the risks and benefits of employing electric fleets.

bit.ly/ElectricFleetPlanning

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CHECKING IN

Keith Biondo

by Keith Biondo | **Publisher**



From a Modest Beginning

Having covered logistics for more than four decades, Inbound Logistics has promoted and encouraged companies to adopt demand-driven logistics practices, and reported their progress driving the evolution of traffic management to supply chain management. The key development in that process was accepting a sea change in business management: Don't plan and push your product at the market and see what sticks. Pull instead. Match your demand signals to supply and alter your processes to support that philosophical switch.

That change required new technology to manage effectively. Today, we are looking at technology that will soon be available to drive that evolution to the next level.

LOOK TO THE SKY

Here are some skyward trends that will empower demand-driven enterprises in 2021 and beyond:

- Cloud hyperscalers, such as Oracle, SAP, AWS, Microsoft, Google, and others, will invest untold amounts and drive the evolution from software-as-a-service to platform-as-a-service to cloud-as-a-service. This will open up exciting opportunities for all industry sectors, including yours.
- The COVID cultural change dynamic and the Zoom response has, to a large degree, mitigated the reluctance of companies to adopt and adapt cloud solutions. People are ready.
- The maturation of industry-specific blockchain solutions will converge with the explosion of cloud infrastructure, lighting up economic activity across the planet.
- As that investment gels, look for industry-specific cloud IaaS solutions as well as enhanced and advanced enterprise solutions, especially empowering supply chain management.
- Demand-driven enterprise planning will morph or replace legacy enterprise resource planning as enterprises shift focus to the new capabilities to see and serve your demand points—no matter where they may be—in near real time. It's about customer centric.
- Cloud IaaS infrastructure will enhance the customer feedback loop as more bidirectional connections are formed, enriching relationships and, once again, spurring growth in new demand-driven connections.
- Let's not forget a different type of investment in cloud infrastructure: Elon Musk has also looked skyward and heavily invested in Above the Clouds Infrastructure called SpaceX. This global network of approximately 30,000 geosynchronous satellites seeks to provide enhanced GPS with location information measured in inches, and high-speed web tone to every corner of the globe.
- These converging trends will spur development of artificial-intelligence-as-a-service (AIaaS), giving rise to new products brought to market faster and more efficiently. For example, by using digitally engineered manufacturing, automation, and adaptive production, the United States can manufacture an e-series next-generation fighter jet in just one year, something that usually takes decades. Having more AI in the cloud will give access to those that cannot afford hosted or local AI power.
- All this investment, and more, will provide a live demand point pulse tracking back to vendors of choice and to their supply chain origination points. Think of it as the customer experience on steroids, where the ability to truly implement a customer-centric ethos provides a pull-along effect, impacting manufacturing, supply levels and relationships, workforce requirements, logistics options, marketing efforts, and more.
- The beauty of these cloud IaaS-empowered systems is that new markets would open up, and legions of new consumers would truly benefit from efficiency and product availability due to cloud-enhanced, demand-driven practices.

When we started what was to become Inbound Logistics in 1981, the latest technology to manage inbound operations was using fax machines to distribute routing guides to vendors. Forty years later, we've advanced from that modest start to using technology in a pivotal year, empowering the demand-driven enterprise. ■



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CHECKING IN

A Valid Question



Felecia Stratton, Editor

Recently I was interviewed for a popular supply chain and logistics blog. The interviewer asked this question: Has the name of the magazine been a deterrent because it doesn't encompass the full breadth of content you provide?

A valid question. My answer: It has not been a deterrent, but sometimes it does need explanation.

So why do we call the magazine *Inbound Logistics*?

When we started publishing 40 years ago, few readers actually had inbound transportation programs or were practicing demand-driven logistics. It was new territory. But we were on a mission to flip the established practice of pushing product at the market. Instead, we encouraged readers to pull materials and product into their facilities based on demand signals. Companies that hoped to be globally competitive didn't need to sit on piles of inventory and hope that their customers wanted what they were selling.

That business approach, which we called "inbound logistics," doesn't sound odd now. But in 1980, it was counterculture.

Today, many call this approach supply chain management or the demand-driven enterprise. No matter what you call it, the benefits and value are clear: It motivates siloed enterprise functions to work together, puts customers at the center of the process and recognizes their value, and reduces resources and dollars tied up in inventory and supporting infrastructure.

Inbound logistics is even more important today, given current business circumstances, market realities, and consumer behavior.

As demand-driven enterprises evolve, the transportation sector has adapted to provide the solutions to support them. While *Inbound Logistics*' publisher looks skyward to identify future trends (see *Checking In*, pg. 12), many of the answers you need are in front of you, right here on the ground. The Logistics Planner (see pg. 293) profiles leading companies offering the solutions that demand-driven enterprises require.

So is the name *Inbound Logistics* a deterrent? Quite the opposite. Over the years, many readers told me that the magazine's mission to encourage and promote flipping from outbound to inbound was the spark that fired them up to change the dynamics of their enterprises.

Felecia Stratton

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GOODQUESTION

Readers Weigh In

If you were writing a book on the supply chain in 2020, what would you call it?



The Shift from Efficient to Effective.

2020 was a gut punch to any supply chain organization that pursued operational efficiency without keeping a pulse on the risk factors that threaten disruption. Effective supply chains designed out risk by addressing safety, security, and reliability vulnerabilities.

—John Reichert

Senior Director, Supply Chain Execution Solutions, Tecsys

The Wake Up Call for Supply Chain Management.

Although recent natural disasters should have prompted supply chain stakeholders to create comprehensive risk mitigation strategies, it was COVID-19 that woke up the industry. Protocols will be introduced to protect the integrity and fluidity of the supply chain.

—Sebastian Wulff

Head, Ocean Freight USA
Dachser USA Air & Sea Logistics

Unpredictable. What we saw in 2020 was a breakdown of all paradigms set into place after the financial meltdown of 2008. Supply chain optimization thrives on predictability and 2020 was anything but that. If we learned anything in 2020, it is the notion that unpredictability is the new normal.

—David Stuver

Executive Vice President,
Supply Chain Solutions
Americold

Flexible and Open: The Keys to Logistics Success.

2020 taught us nobody knows exactly what the future holds in terms of opportunities and challenges in the logistics space. Instead of trying to predict market conditions, if you operate in a flexible technology environment (structured to accommodate multiple use cases) that is also open (where additional outside capabilities can easily be integrated), you are better set up for success.

—Larry Klein
VP, Logistics
Brigg

Journey to the Last Mile: How RFID Saved the Supply Chain.

It was the best of times. It was the worst of times. Supply chain management in 2020 saw challenges that shook the industry to its core. A rapid, seismic shift from B2B to D2C meant consumers demanded more goods delivered to their doorsteps, ever faster and faster. Supply chains racing to meet customer expectations found RFID solutions allowed them to navigate this uncharted territory and through unforeseen obstacles at the last mile.

—Ryan Yost

VP/General Manager,
Printer Solutions Division
Avery Dennison Corporation

Supply Chain Silver Linings. While 2020 was full of challenges, it ultimately made us more agile and resilient. As e-commerce boomed, we shifted from previously held beliefs to find new ways to provide unique solutions for our customers. This allows us to meet our customers' needs into the future.

—Pal Narayanan

EVP, Chief Information Officer, Americas
GEODIS

Flash Forward. The book would explore how the pandemic exposed vulnerabilities and accelerated secular trends by more than five years in less than five months to support increasingly complex and constantly evolving e-commerce supply chains.

—Gaurang Shastri

Managing Director, Head of Logistics
and Transportation Group
Lincoln International

Reefer Madness: How the Supply Chain Kept Its "Cool" During a Global Pandemic. While the initial coronavirus outbreak in China brought significant cold chain disruption, it took only four weeks to implement logistical solutions that ensured the world's population had continued access to chilled and frozen perishables.

—Greg Tuthill

Chief Commercial Officer
SeaCube Containers



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GOODQUESTION

If you were writing a book on the supply chain in 2020, what would you call it?

The Year the Supply Chain Broke—and

How We Fixed It. It would recap the supply chain breakdowns of 2020, what we learned, and how we resolved them.

—Clifford F. Lynch
C. F. Lynch & Associates

A Brave New Supply Chain.

The pandemic exposed supply chain holes, especially areas that weren't enabled digitally. Common practices, including physical bills of lading, didn't work as efficiently as they used to. Although the supply chain worked to adapt, holes continued to grow. Now, shippers, carriers, and retailers must work together to not only patch gaps but to better prepare for the future.

—Will Chu
CEO & Co-founder, Vector

The Perfect Storm: Supply Chain's Imperfect Businesses.

For many industries, the desire to innovate and scale with technology drives lasting change. Most businesses are fraught with a complex web of globally interconnected systems that inherently fail supply chain logistics. Couple that with natural disasters and a pandemic, and it was the perfect storm.

—Alexi Cashen
CEO, Elenteny Imports

Taking Back Control of Your Supply Chain.

In 2020, companies were forced to re-examine their supply chains and reconsider how they have happily relinquished control to increasingly opaque and dubiously controlled partners and vendors. The impact of this reclaimed control creates new strategic opportunities in 2021.

—Bill Denbigh
Senior Director, Product Marketing, Tecsys

Agile Network Transformation: The Path to Keeping It Together.

Supply chain management in 2020 called for creative pivots, technology, flexibility, and new ways of operating to keep up with rapid changes. The companies that implemented these concepts proved to be the most successful.

—Sarah Johnson
EVP, Mobile Warehousing and Storage
Milestone

Would-be Bestsellers



Resilient and Agile Supply Chains for a Chaotic World

—Antony Lovell
VP, Applications
Vuealta

Supercharging the Supply Chain with Agile Planning and Seamless Execution

—Andrew Butt
Co-founder + CEO
Enable

How the Pandemic Flipped Logistics on Its Head

—Roy Rosell
Head of Product Marketing
NEXT Trucking

What a ShipShow: How a Stormy 2020 Almost Buried the Shipping Industry

—A.J. Hernandez
CEO, SkyPostal

Frantic: How the 2020 Pandemic Challenged Global Supply Chains

—Scott Deakins
COO, Deacom

Supply Chain 2020—From Fragile to Agile: How a Global Pandemic Strengthened the Supply Chain

—Mike Wilson
CEO
Consolidated Chassis Management

The 7 Habits of Highly Effective Disruptions

—Aaron Galer
Senior Vice President,
Strategic Partners
Arrive Logistics

Freight-ened 2020: A Tale of Economic Survival, the Race for a Vaccine, and the Most Complex Supply Chain Challenges of our Generation

—Park Williams
VP, North America Sales
BDP International

Disturbed, Positioned, and Delivered

—B. Lakshminarayanan
Managing Director/Country Head
Orient Star Transport
International Pvt Ltd.

Have a great answer to a good question?

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

Do you expect a resurgence in reshoring to the United States? Why or why not?

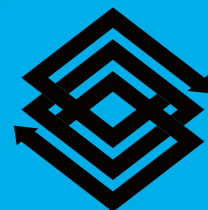
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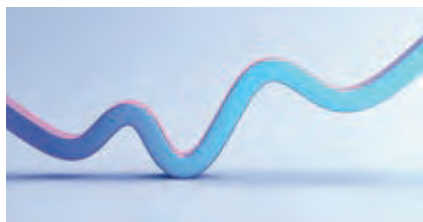


SYMBIA LOGISTICS

[INSIGHT]

DIALOG

@ILMagazine



Re. Revisiting 2020

bit.ly/2020inrearview

In May 2020, demand was much lower and as a result, ports, warehousing, and other downstream supply chain labor and resources planned for declines. However, demand accelerated in July and August causing considerable constraints on chassis, capacity, labor, and port efficiency. As a result, we witnessed unprecedented increases in fulfillment costs.

—Patrick Winter

Vice President of Operations, NEXT Trucking

In less than three months in 2020, we went from blank sailings to “Shipageddon.” Just as solutions were developing for the former, the latter made those obsolete. Set your adaptability meter to warp speed and join the pace of change.

—Rich Bolte

Chairman & CEO, BDP International

In 2020, COVID forced carriers to reevaluate their capacities and, as a result, there is less service and longer transit times. The virus has reset the way people think and encouraged them to develop new ways of doing business so they can earn higher revenue.

—Ron Atapattu

Founder & President, Ship OCI

RE. CHECKING IN, NOVEMBER 2020: DO YOU LIKE RASPBERRIES?

bit.ly/raspberry_SC

What a great read regarding logistics and our food chain. Spot on.

BTW, we grow the best raspberries in the Willamette Valley in Oregon, where I come from.

—Bill McClellenn, via email



Re. Checking In, December 2020: Think Big, Act Small

bit.ly/thinkBIG_actsmall

This makes an important point: The quality of our services in the United States has declined, and it is mostly because of prioritizing transaction cost over value. Large logistics companies have the advantage of more seamlessness, but often the individual workers, including management, fall short of the experience and commitment of small companies. We see standards declining—the time allowed to respond to an email, the individual attention given to orders and issues, and so on.

—Danny R. Schnautz

Clark Freight Lines

Re. How Cold Chains Can Be Optimized for the Delivery of COVID-19 Vaccines

bit.ly/coldchain_optimized

The global vaccination rollout represents the largest and most significant supply chain logistics project in the history of humanity.

—Dominic Thomas

EVP, Business Consulting, Kinaxis

Raw materials for the manufacture of vaccines may prove to be the biggest

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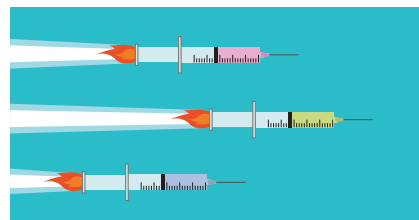
editorial@inboundlogistics.com

obstacle in the effort to get needles in arms. Some vaccines include a boosting agent or adjuvant, which is found in shark liver oil, otherwise known as squalene. Other vaccines use an alternative squalene adjuvant that comes from the bark of a soapbox tree, found primarily in Chile. There are finite supplies of both.

I view production capability to be the most elevated challenge in vaccine supply chain concerns. This is not to say logistics is simple, but there are bigger concerns in our ability to produce a sufficient number of vaccines that have proven safety and efficacy in a timely manner.

—Prof. Burak Kazaz

Whitman School at Syracuse University



Quick TIP

Make people central to your digital transformation.

This will pay huge dividends. Although many claim AI will mean we need fewer workers, similar claims about the productivity gains from the Internet have yet to come true.

—Franco van Heijningen

VP, Strategic Operations, CREAM

WELCOME TO THE NEW NORMAL.



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10 TIPS

Optimizing LTL Shipping

Less-than-truckload (LTL) freight shipping is critical to everyday commerce and is an economical way to ship palletized or loose freight. Here's how to do it well.

1 UNDERSTAND YOUR CUSTOMERS' EXPECTATIONS.

The LTL choices you make are a direct reflection on you, in the eyes of your customer. Get familiar with your customers' expectations and make these expectations a priority when considering your LTL options.

2 IDENTIFY YOUR GOALS AND OBJECTIVES.

Your logistics and supply chain decisions should be in sync with your team's goals and objectives. Logistics is not just a commodity—understanding your goals and how your LTL shipping fits into this is important.

3 BE WILLING TO ADAPT.

Stay nimble and be open to doing things differently. Partnering and collaborating with your LTL provider(s) can help improve operational efficiencies for all parties; for example, spotting/dropping trailers and eliminating multiple pickups or deliveries on the same day. If a mode-shifting solution is viable and can help the customer, then it will require some operational changes in order to achieve cost savings.

4 KEEP DATA TRANSPARENT.

It's to your benefit to share as much data as possible; the quality of the logistics solution and accuracy of the pricing are strongly correlated to how much data you're willing to share. Don't be fearful of sharing detailed data with a logistics provider that you trust. Signing a nondisclosure agreement is always an option to provide another layer of security to protect your data.

5 CONDUCT A REQUEST FOR PROPOSAL.

There's no "best" carrier for every lane. Every carrier may

perform differently lane by lane. If you are inexperienced in conducting an RFP, just ask your logistics provider for assistance.

6 ENSURE CARRIER FIT.

This closely ties back to the first tip. The lowest-cost provider may not always be the best option if customer experience is poor and expectations are not being met. There are other indirect ways to save money without having to settle for a subpar provider that's offering "the lowest price in town."

7 CONFIGURE SHIPMENTS ACCURATELY.

Reviewing how you package and/or palletize your freight is very important and can affect density, class, and cube, among other things. For instance, would a Euro pallet better fit your freight than

using a larger standard pallet that takes up more floor space on the trailer?

8 CONSOLIDATE PURCHASE ORDERS & CUSTOMER ORDERS.

Combine smaller shipments that are going to the same destination (inbound or outbound). Communicate with your customers and look for ways to collaborate on the order process—for example, instead of sending over multiple orders per day, they can send you all the orders near the end of the day. This allows your team to combine orders into fewer shipments.

9 SHIFT TRANSPORT MODES.

LTL freight doesn't always have to move down the road in a traditional LTL network. It's possible you have at least one lane that can be optimized and consolidated to find cost savings.

10 CLEARLY DEFINE SERVICE OFFERINGS.

Establish and communicate shipping options with your customer (consignee) and explain the cost versus transit trade-off. Share the savings if the customer is willing to delay shipping, which allows the opportunity to consolidate/optimize shipments.

SOURCE: SCOTT THARNISH, VICE PRESIDENT OF MANAGED SOLUTIONS, ARCBEST



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Personal Care Products & Cosmetics

WHAT'S IN STORE?

In-store shopping accounted for up to 85% of beauty product sales in most major markets before the pandemic, finds a McKinsey report—even millennials and Gen Zers made almost 60% of their cosmetics

purchases in stores (*see chart*). What will happen to physical beauty product stores in the future?

About 30% of premium beauty product outlets shut—some won't reopen, and new openings will likely be delayed

for one year or more, the report says. Also, increased online sales are not offsetting the decline in in-store sales.

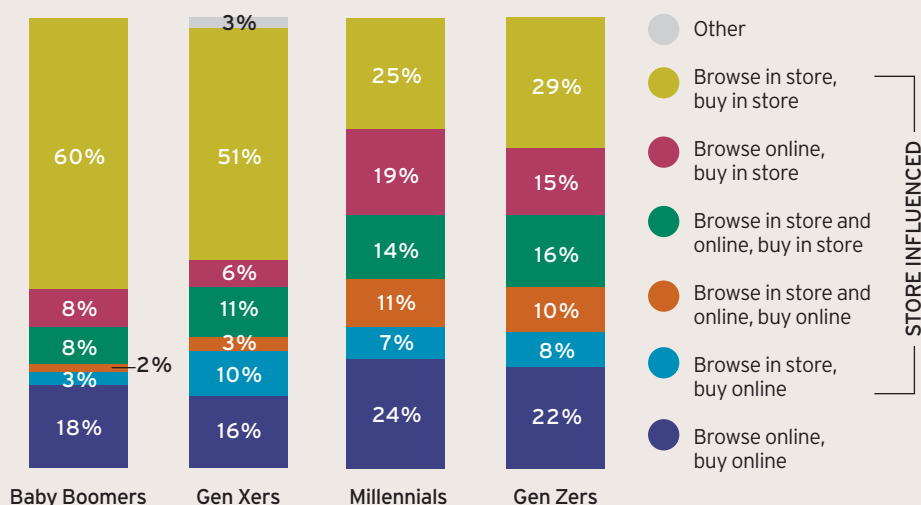
In China, the return to in-store shopping may be slow. While many stores reopened in March 2020, they report

that sales have not fully bounced back.

However, brands that were able to scale their operations report online sales twice as high as pre-COVID-19 levels. For example, Sephora's U.S. online sales are up 30% versus 2019, as were Amazon's beauty product sales in April 2020, McKinsey says.

Retailers are using promotions to bring back consumers and move unsold inventory. In an atypical move, many high-end beauty brands are offering discounts of up to 40%. As brick-and-mortar stores reopen, more promotions will likely be aimed at reclaiming foot traffic, the report says.

COSMETICS SHOPPING HABITS BY AGE GROUP



COUNTERFEIT PRODUCTS COST THE COSMETICS INDUSTRY MORE THAN \$75 MILLION EACH YEAR.

—U.S. Customs and Border Protection

ULTA BEAUTY'S E-COMMERCE SALES GREW 90% YOY IN Q3 2020, DRIVEN BY ITS BUY ONLINE/PICK UP IN STORE OPTION.

—Digital Commerce 360



BEAUTY BOX SUBSCRIPTIONS SURVIVE

Although the pandemic initially caused an increase in cancellations of beauty box subscriptions, many services bounced back. Consumers buy beauty boxes to try new products as they avoid physical stores, says a report from Glossy.co—shifting retailers' focus to e-commerce fulfillment.

Even before stay-at-home orders began in the United States, both Birchbox and FabFitFun went through layoffs, and Sephora ended its subscription service.

Box of Style's subscriber growth declined up to 30% in March 2020, says CEO Rodger Berman. However, sales have since rebounded and retention was unaffected. The average daily subscriber growth is now 20% higher than in Q1.

Birchbox also experienced an increase in subscribers across all subscription tiers, Glossy.co says. Since April, it added more personal care products, such as hand sanitizer and nail kits, to meet demand.

Retention at BoxyCharm has stayed nearly the same since March, says founder Joe Martin. It introduced wellness items, such as vitamins, into its monthly online shopping events, which boosted retention.





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Personal Care Products & Cosmetics

“BEAUTY, MUCH LIKE DURING THE RECESSION IN 2008, WILL CONTINUE TO THRIVE BECAUSE PEOPLE WANT SMALL LUXURIES TO HELP THEM FEEL BETTER BOTH PHYSICALLY AND MENTALLY.”

—Kirbie Johnson, Beauty Reporter, Gloss Angeles



NAILED IT

With many hair and nail salons closed during the pandemic, DIY beauty categories and self-care products found new customers:

- Hair dye sales were up 23% and hair clipper sales were up 166% in the United States in the first week of April 2020 versus 2019, Nielsen reports.
- Sales of Madison Reed's at-home hair-coloring kits increased tenfold from mid-March to mid-April 2020.
- Online sales of high-end nail polish have seen double-digit growth every week since March 2020 in the U.K., McKinsey reports.
- Zalando, Europe's largest fashion and lifestyle e-commerce marketplace, says that sales of its skin, nail, and hair care products were up 300% year on year in April.
- Amazon's sales are way up for nail products (218%), hair coloring (172%), and bath-and-body products (65%) compared to 2019.
- Revlon has seen nail polish sales grow 13.1%, nail tools grow 15%, and foot tools grow 274% year over year.

PERSONAL CARE ON DEMAND

Shoppers can order takeout and groceries almost instantly with various mobile apps, but what about personal care items like deodorant and shampoo? With the influx of online orders during the pandemic, same-day and two-hour delivery options are popping up for trendy personal care brands, many of which have never been able to offer same-day shipping.

To meet this demand, fulfillment technology startup Darkstore launched FastAF, a digital shop that curates premium personal

care products and delivers them to doorsteps in two hours. Currently serving New York City and Los Angeles, FastAF uses dark stores—microfulfillment centers strategically placed in urban areas—to deliver in-demand beauty, personal care, and wellness products from popular brands such as Glossier, Aesop, Le Labo, Moon Juice, and Drunk Elephant.

Among the top beauty brands that now offer same-day delivery: Sephora partnered with Instacart to offer one-hour



delivery from nearly all its North American locations. MAC Cosmetics offers a same-day delivery option through Postmates. Coty, whose brands include Covergirl and Sally Hansen, partnered with GoPuff to offer 30-minute no-contact delivery.

EYE LIFT

Demand for eye makeup is on the rise as consumers set their sights on above-the-mask products. While Amazon sales of lip care and lipstick dropped 15% for the month ending on April 11, 2020, eye makeup sales were up 204% year-over-year for the three-month period ending in June 2020.

This trend challenges the “lipstick index,” a term coined by Estee Lauder chairman Leonard Lauder to explain the rise in lipstick sales during economic distress. Lauder says the concept may pave the way for other accessible luxury items during the pandemic, such as eye makeup. The global beauty market—currently valued at \$500 billion—will decline by 20% to 30% in 2020.

Some beauty brands have found silver linings in eye makeup and skin care sales. Alibaba saw success in the category in China, reporting 150% month-over-month growth for eye cosmetic sales during the week ending February 18.

Beauty chain Amazing Lash Studio reports a 480% rise in eye makeup sales since March, and Tweezerman experienced a 330% rise in eyelash curler sales.



Skin care sales are also booming as Americans focus on self care and mitigating “maskne,” a new phrase describing skin breakouts caused by wearing face masks.



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LEADERSHIP

Conversations with the Captains of Industry

An All-American Leader



Jessica Tyler
President, American
Airlines Cargo

Growing up around a family-owned business, establishing a tireless work ethic, and pursuing an early career as a teacher helped shape Jessica Tyler's "open book" leadership style.

by Merrill Douglas

Long before Jessica Tyler became an airline executive, she was an educator. "My earliest understanding of relationships and engagement came from being a teacher and coach," says Tyler, who in June 2020 took on a double role at American Airlines (AA)—president of the cargo business and vice president of airport excellence.

"As a teacher in my 20s, I quickly came to see that the only way to get the most out of someone, to help them fulfill their own potential, is to have a relationship with them," says Tyler. Even today, she spends part of each week talking one-on-one with employees, getting a sense of who they are and where their talents and interests might take them next.

During *Inbound Logistics'* own recent one-on-one with Tyler, we learned how she's leading AA Cargo through a digital transformation, the pandemic, and beyond.

IL: How did growing up around a small, family-owned business influence your career?

My father spent years in corporate leadership before he and my mother opened an art gallery and custom framing business. They worked seven days per week for almost 40 years. Their work ethic made a tremendous impression on me. So did their ability to reinvent themselves over time, responding to new competition from big-box stores and learning to draw traffic to their website.

They taught me to never stop learning. I'm known for asking a lot of questions; I get that from my father.

IL: What's one incident from your early career that helped shape you as a leader?

When I was assistant principal at a middle school, one teacher seemed to have a horrible attitude. The students didn't like her and she didn't like the students. My first reaction was, "Why are you a teacher if this is how you feel every day?"

But over time, as we developed a relationship, we were able to connect her back to her purpose and passion. As a corporate leader, I've learned that if you don't take care of the people who take care of the people—in that case, the teacher who took care of the students—you have no hope of success.

IL: You spent several years leading AA Cargo's digital transformation initiative. What changes did you achieve?

We went on a multiyear journey to streamline and upgrade

our IT landscape. That resulted in replacing about 90 systems, some of which were 40 years old and based on green screens and command-driven software. In their place, we now have a modern, end-to-end system to manage everything from booking to invoicing and all the logistics in between.

For shippers, the new system provides a better customer experience and more detailed shipment tracking. There's more capability for electronic communications, and our website offers more self-service transactions, such as route searches and claim submissions. We also have better booking capabilities. And that's just the beginning.

IL: What's your leadership style?

I'm a pretty open book. As a leader, I have to be clear about what we do and why we do it. And I have to work on the assumption that most people show up at work wanting to do a good job. They want to feel that they're part of something bigger than they are, and that their talents and strengths matter. This has helped me in many difficult situations.

For instance, our digital transformation was some of the hardest work I've been part of. There were tears and long nights and weekends. There were moments of little hope that things would work out. In times like that, it's important to ask, "Why are we doing what we're doing?" and "Are we surrounded by people we trust and support?" The most important part of leadership is being open and transparent about all that.

IL: What are your strategies for nurturing talent?

I'm a big believer that growth for talented folks is rarely a planned thing. It's important to help others understand what they do best and see how they can apply their talents in new ways, whether that's through projects, special task forces, or outside opportunities.

I make a point of spending time with our folks, and encouraging other leaders to do the same, to learn about their interests and help connect them to opportunities within the organization. I also want to learn about people's experiences and backgrounds. That helps us bring greater diversity to our teams.

IL: What has been one of your best days since you took on your new roles at AA Cargo?

What Can We Do to Help?

COVID-19 hit the airline industry hard, as most passengers canceled plans for nonessential travel. For AA Cargo, though, the pandemic also presented a new opportunity. The airline used some of its idled passenger aircraft to operate cargo-only flights for the first time in 34 years.

But devising a strategy for cargo in the COVID-19 era wasn't easy. "In the passenger world, you have many months' worth of outlook on demand—who has booked travel and where," says Jessica Tyler. "In cargo, we have a 10-day booking window."

Nor has life in general been easy for AA Cargo's employees. "We've had to go through some hard times to get leaner and to respond appropriately to the crisis," Tyler says. "At the same time, all of our employees show up asking, 'What can we do to help?'"

"I'm amazed that with all the stress we're under, our teams still show up every single day," she adds. "They are completely committed to the purpose we are trying to serve in the world."

One recent highlight was the day I did a video town hall with our team at Los Angeles International Airport. During the pandemic, I've missed spending quality face time with our teams across the world. In that meeting, it was great to look people in the eye, hear what they were thinking, share our plans for the near term, and say thank you.

IL: With whom would you like to switch jobs for a day?

A front-line leader at American—for instance, the customer service manager who supports the teams that load passenger bags. Switching with that leader to understand all that someone in that role goes through in a day would be a valuable experience.

IL: How do you spend your time outside work?

My husband and I have three sons, ages 15, 13, and 10. They're all athletic and into multiple sports, so that keeps us busy. I like to escape sometimes by reading mindless fiction. We also do a lot of volunteering along with my parents. But right now, there's nothing more important than making sure our boys know how to be responsible, helpful, caring, and kind people when they grow up. ■

READERPROFILE *as told to Karen Kroll*

Sylvia Wilks: Kicking the Tires



SYLVIA WILKS is vice president of operations with TireHub, a national tire distributor.

RESPONSIBILITIES: Build a quality supply chain from scratch that disrupts the market, drive a culture of continuous process improvement, and lead TireHub into the future as part of the executive business team.

EXPERIENCE: Chief procurement officer, Kimberly Clark Corporation; executive roles in global sourcing, supplier relations, international supply chain, soluble coffee operations, and other functions with Starbucks; leadership of multisite food manufacturing operations in the United Kingdom.

EDUCATION: B.Eng., The University of Hull, U.K., 1986.

TireHub is a joint venture startup between two competitors: Goodyear and Bridgestone. As the primary wholesale distributor for these companies, TireHub is disrupting the market. In two years, we have grown to 70 TireHub logistics centers across the country. It has been an exciting time to build a business from the ground up.

To get there, TireHub implemented the technology needed to make ordering and receiving products seamless. One example is TireHub Now, a built-from-scratch system that offers real-time access to inventory, online ordering, and order information.

We pride ourselves on customer service excellence. The logistics specialists who deliver tires to customers understand exactly how the product should be presented so it's convenient for the dealers and doesn't interrupt customer interactions. They go in with a smile and check to see if the customer needs anything else.

We don't pretend to be perfect. We actively solicit feedback from customers and incorporate it into our technology. One example of this feedback is our Roadnet system, which offers customers delivery tracking and instant notifications when their tires are on the way.

Speed is currency and a competitive edge in the tire industry. To that end, TireHub's Omnitracs Roadnet system uses algorithms to simplify complex routing decisions and enable drivers to add multiple routes each day.

Even though we haven't been able to have much face-to-face contact with our

customers in the past few months, we do reach out and check in on them. They have welcomed this soft touch.

We also want to make sure customers understand our promise is our word. We're only as good as our last delivery. Rather than a one-size-fits-all model, we tailor our customer experience for different clients.

*"We don't pretend to be perfect.
We incorporate customer
feedback into our technology."*

In my previous role with Starbucks as vice president of procurement, I purchased food, tea, and beverage ingredients, and managed supplier relationships. I got to know what good customer service feels like. Now that I'm a supplier to my customers, I know how to meet their expectations.

I'm proud of helping to build TireHub's team and culture. We started with a handful of people from Goodyear and Bridgestone, and brought in a few from outside the industry. The diversity of experience and thinking helped craft a solid team that can grow this concept and build a culture that attracts great talent.

When we established TireHub, we were determined to be very different—intentionally outrageous—and disrupt the market. We've had our challenges, but bringing a different approach and new ideas is unique in the tire industry. ■

Sylvia Wilks Answers the Big Questions

1 What's the best leadership advice you've received?

I found some of the best leadership advice in the poem "For a Leader" by Irish poet John O'Donohue: "May leadership be for you a true adventure of growth." If you aren't continually curious and open to development, you can't grow talent and nurture the best ideas for your business.

2 If you could speed the development of a supply chain-disrupting technology, what would it be and why?

The tire industry has experienced a growing breadth of wholesale distributors and massive SKU proliferation. Improving supply and demand planning accuracy using machine learning would have a major benefit in overcoming product availability constraints. We could say yes to more customers, and ensure we protect cash by buying only the inventory we need to service the business.

3 If you had \$1 million to start a new venture, business or philanthropic, what would you do?

I'd put the cash into a business providing local farm-to-table food at affordable prices and tackle food insecurity in the "richest economy in the world."

4 Do you have any heroes?

My heroes are people who stand for social justice, truth, and what they believe in, no matter the personal consequences. A personal friend is Colonel Grethe Cammermeyer, Ph.D., who served in the U.S. National Guard and advanced LGBT rights. My former Atlanta U.S. Rep. John Lewis is also a hero for advancing civil rights, and being truly brave in crossing the Edmund Pettus Bridge in the face of certain violence.



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[IN FOCUS]

NOTED

The Supply Chain in Brief

> SEALED DEALS

• **CEVA Logistics** and Italian publishing company **Mondadori Group** signed a contract to extend their partnership for another five years. The CEVA Logistics Italia team will continue to manage consumer orders, concentrating operations in a dedicated warehouse in La Città del Libro (City of Books), where it will handle 30 million book copies and 65,000 titles each year.



• **Agros Produce**, which grows tomatoes in high-tech greenhouses in Mexico, partnered with **IFCO Systems**, a provider of reusable plastic containers, to pack and transport tomatoes to retail grocery customers in the United States and Canada. Agros uses more than 400,000 IFCO containers each year to pack and ship beefsteak, on the vine, Roma, and grape tomatoes to food stores.

> GOOD WORKS

E-commerce retailer **Internet Fusion Group** created a 99% plastic-free sustainable packaging process by investing in two Quadient automated packaging machines and switching to corrugated fanfold material, a fully recycled and recyclable cardboard product, from Ribble Packaging.

Fiat Chrysler donated nearly 10 million masks and more than 55,000 face shields overall, including 400,000 masks and 30,000 face shields to Protect Native Elders, a nonprofit that supports people living on tribal lands in the United States, who are disproportionately impacted by the virus.



South Carolina Ports Authority awarded \$61,000 in grants to 55 charitable organizations through its annual Community Giving Program. Many of the recipients, such as Fresh Future Farm, Fields to Families, and East Cooper Meals on Wheels, fight hunger and address food deserts by providing meals, urban gardens, and affordable grocery options to their communities.

> M & A

■ **FedEx** signed an agreement to acquire **ShopRunner**, an e-commerce platform that connects brands and merchants with online shoppers.

■ **Penske Logistics** signed an agreement to acquire Chicago-based trucking company **Black Horse Carriers**.

■ New England-based rail transport provider **CSX Transportation** acquired Massachusetts-based **Pan Am Railways**.

■ North American supply chain solutions provider **J.B. Hunt Transport** acquired the assets of **Mass Movement**, which provides logistics, delivery, and installation services for the commercial fitness industry.

■ **Taylored Fulfillment Services**, a national third-party logistics provider based in New Jersey, acquired the U.S. operations of Australia-based **Toll Global Logistics**.

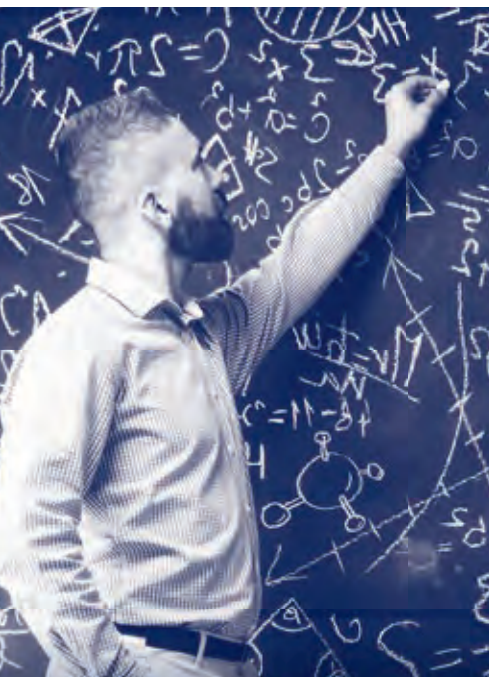
■ **Dupré Logistics** acquired Michigan-based **TTS Logistics**, a specialty produce transportation services provider.

■ Transportation and logistics management solutions provider **Hub Group** acquired **NonstopDelivery**, a last-mile logistics provider.

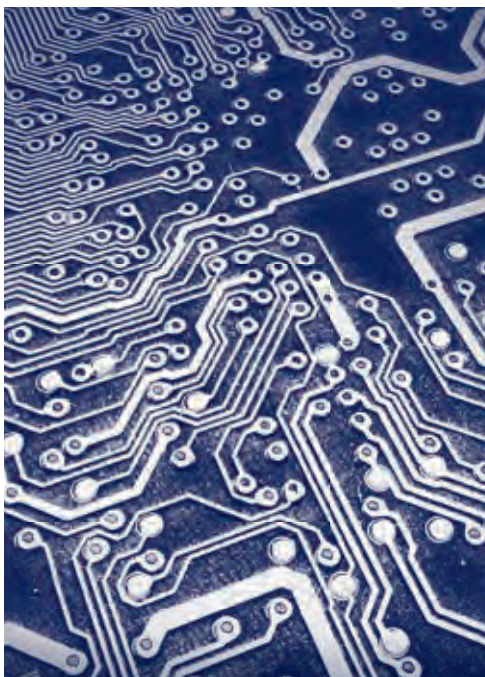
■ Global investment firm **Platinum Equity** entered into a definitive agreement to acquire **Ingram Micro**, a provider of technology logistics services and solutions, from HNA Technology.

■ Distributed commerce network **CommerceHub** acquired Utah-based digital supply chain company **Dsco**.

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NOTED

> SEALED DEALS

- **Hollister**, an employee-owned company that develops healthcare products and services, selected **Kinaxis** as part of its technology innovation strategy. Kinaxis' RapidResponse platform helps the company make decisions based on real-time data, provides end-to-end visibility, and improves its risk management capabilities.
- Radiation oncology company **Accuray** is partnering with **DHL Supply Chain** to strengthen its aftermarket supply chain and expand customer service globally. The partnership provides medical care teams with access to the radiotherapy technologies they need to deliver effective treatments to patients.

> GOOD WORKS



a2b Fulfillment pledged \$150,000 to the Pete Nance Boys and Girls Club's campaign for a new facility in Greensboro, Georgia. The facility will establish a foundation for Greene County youth and connect them with high-quality mentors, coaches, teachers, and counselors.

OmniTRAX and its affiliate **Northern Ohio & Western Railway** funded 120,000 meals to help the West Ohio Food Bank serve Northwest Ohio. They also pledged volunteer employee support as the state continues to fight food insecurity and other public health challenges resulting from the pandemic.

Ford worked with **General Electric** to produce 50,000 ventilators under a contract with the U.S. Health and Human Services Department. Having pledged not to profit from the pandemic, Ford put the earnings from that contract into making and distributing 100 million fabric masks by the end of 2021.

> RECOGNITION

- **BYD** was named **Sustainable Supplier of the Year** at the Anheuser-Busch Eclipse Sustainability Summit for its innovative 8TT battery-electric heavy-duty trucks. BYD's foresight into additional applications of electric vehicle technology helped make the beer company's logistics operations more sustainable.



- **Canadian National Railway (CN)** earned a spot on the **Dow Jones Sustainability World Index** of global and regional sustainability leaders. The index is based on an analysis of economic, environmental, and social performance, and assesses issues such as corporate governance, climate change mitigation, and labor practices.

- **Schneider**, a provider of transportation and logistics services, was honored with the **Platinum Dry Carrier of the Year** award by global food company General Mills. The award recognizes one carrier that goes above and beyond in several categories, including on-time service metrics, teamwork, and creative solutions.

- CB Insights named **Happy Returns** to its inaugural **Retail Tech 100** list, which ranks the most promising business-to-business retail tech companies in the world. Companies were chosen based on business relations, investor profiles, sentiment analysis, market potential, competitive landscape, and tech novelty.

- Logistics services provider ArcBest's less-than-truckload carrier **ABF Freight** was recognized as a **2021 Military Friendly Employer** based on public data sources, input from employed veterans, and survey responses. Through the Teamsters Military Assistance Program, ABF creates job opportunities for military personnel transitioning to civilian careers. More than 500 veterans have graduated from the program.

- **Old Dominion Freight Line** has earned the **Mastio Quality Award** for national less-than-truckload carriers. Old Dominion was ranked as the top carrier according to a survey of logistics professionals assessing carrier performance. It stood out from other national carriers in a quantitative ranking of attributes such as trustworthiness, on-time delivery, and courteous and professional drivers.

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NOTED

> GREEN SEEDS



UPS is upcycling thousands of its old uniforms into dog leashes to help provide homes and jobs for Atlanta residents. Participants in the Initiative for Affordable Housing's re:loom program made about 1,200 leashes in six months. Re:loom trains homeless and low-income individuals to make hand-woven products. The leashes are donated to Best Friends Animal Society and go home with dogs adopted at the center.

Moonshot, a startup snack brand, aims to create a new product category called "climate-friendly food." The ingredients in all its snacks are grown regeneratively, and its shipping operations are carbon neutral. Any emissions from the product that can't be reduced are offset.



Lufthansa Cargo's Boeing 777F completed the first-ever 100% carbon-neutral freight flight in partnership with **DB Schenker**.

The aircraft traveled to Shanghai, China, and back from the airline's main hub in Frankfurt, Germany. The logistics service provider and the airfreight company transported goods from Siemens Healthineers AG, and plan to operate carbon-neutral flights during the summer 2021 flight schedule.



Danone North America partnered with **Full Harvest**, a business-to-business online produce marketplace, to create a line of yogurts flavored with imperfect and surplus fruit that would otherwise go to waste. The first yogurt in this line will be made from upcycled Meyer lemons, and will feature a "Full Harvest Verified Rescued Produce" seal on the label. Additional flavors will roll out in 2021.

> SHOVEL READY



Walmart broke ground on its nearly 3-million-square-foot Ridgeville Import Distribution Center in Dorchester County, South Carolina. The direct import distribution center will supply several regional facilities, which support approximately 850 Walmart and Sam's Club stores.

Amazon plans to build a 629,186-square-foot warehouse and distribution center in East Fishkill, New York, to handle high-volume inventory. The facility will have 132 shipping and receiving docks and 700 trailer parking spaces. Amazon has signed leases for five new delivery stations in New York.

Union Pacific will offer intermodal service to Minneapolis and St. Paul with the opening of its Twin Cities Intermodal Terminal in Minneapolis. The new service will provide domestic intermodal service between Minnesota and Los Angeles.

With growing e-commerce demand, Texas-based jewelry brand Kendra Scott opted to expand its operational footprint with **PFS**. To that end, PFS will open a new fulfillment center in the greater Dallas area to increase daily output capacity for Kendra Scott, for which the company operates an e-commerce fulfillment program.



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> GREEN SEEDS

Diamond producer **De Beers** plans to ethically source diamonds and be carbon neutral by 2030. It will provide the origin and impact of every diamond it discovers, while extending ethical standards across diamond mining. It tracks diamonds using blockchain to eliminate impostors and conflict minerals.



Under construction in Costa Rica, **Sailcargo's** first shipping vessel is made almost entirely of timber. When conditions are ideal, the masts propel the boat while the solar panels power the electric engine and propellers when needed. Sailcargo plants more trees than it chops down, making it carbon negative.

> SEALED DEALS



- **Catch.com.au**, an Australian online retailer, will implement more than 100 **Körber** robots to create new e-commerce opportunities in Australia and New Zealand. With a growing customer

base and more consumers now shopping online, the robots will flexibly scale in line with the company's business growth and increase its product and service offerings.

- Michigan-based distributor **Gordon Food Service** selected **Descartes Systems Group's** Perform for Food cloud-based solution to improve accuracy and efficiency during final-mile delivery. The mobile solution eliminates paper and related costs, and increases customer satisfaction by enabling accurate deliveries and clean invoices.

- **American Tire Distributors**, a supplier for the replacement tire market, is partnering with delivery orchestration platform **OneRail** to expand the company's expedited tire delivery program, ATD Express, nationally. Customers can order tires through an online portal, which provides an option for delivery in 90 minutes or less.

> UP THE CHAIN

Volkswagen's head of VW Group Logistics, **Thomas Zernechel**, retired at the end of 2020 after 16 years.



He will be replaced by **Simon Motter** (*pictured*), previously head of supply chain at Audi's Ingolstadt plant and head of international logistics at Audi. Motter will continue to advance Volkswagen's digitization and sustainability efforts.



Bridget Neal, former president of **Bridgestone Americas'** off-the-road tire business in the United States and Canada, was promoted to

senior vice president of logistics and supply chain management. Neal joined Bridgestone as an engineer and served in various roles of increasing responsibility during her 18-year tenure.

Less-than-truckload carrier **Central Freight Lines** named **Jerry Moyes** as its chief executive officer. Moyes, founder of Swift Transportation, will help optimize less-than-truckload services, expand product offerings to customers, and guide the company through the disruption resulting from the pandemic.

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TAKEAWAYS

Shaping the Future of the Global Supply Chain

COLD CHAIN TAKES A SHOT

The freight industry is tasked with transporting an average of 271 million ultracold and cold COVID-19 vaccine doses per month. At least 857 temperature-controlled trucks will leave Pfizer and Moderna manufacturing facilities or distribution centers each month, says an ABI Research report, and delivery will get more complicated after large urban and suburban areas are covered.

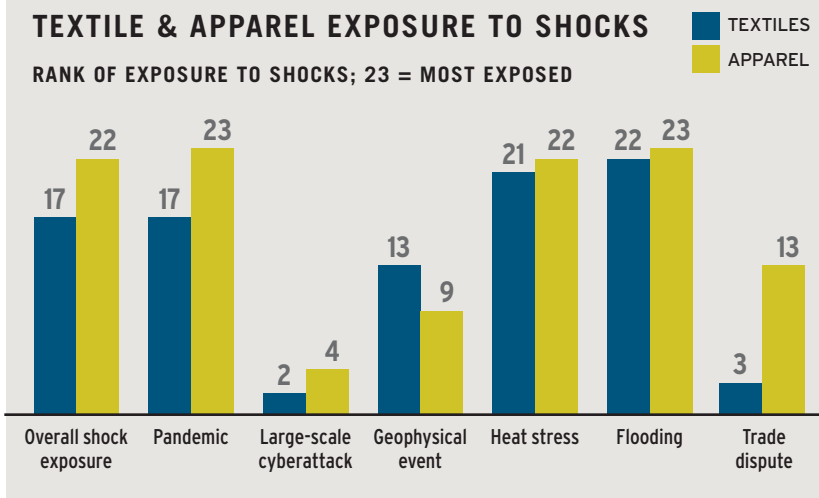
Some vaccines require temperatures as low as -94 degrees, and constant temperature control is needed from the manufacturer to inoculation sites. However, the containers needed to store and transport them aren't widely available, ABI Research says. People will require two vaccines from the same manufacturer within 21 to 28 days, which equates to at least 662 million doses in the United States and approximately 1.5 billion across the European Union, the report says.

Much of the focus has been on fulfillment centers and modal capacity for air. Another concern is tracking temperatures and providing alerts for out-of-spec loads. This involves integrated software, sufficient sensor capabilities, and the cooperation of both public and private entities across multiple transport modes, and even between competitors.

"The scale of technology, strategy, and operations excellence needed will require transparency, flexibility, and scale never seen, and will take herculean efforts beyond the actual vaccine development and approval," says Susan Beardslee, analyst at ABI Research.

TEXTILE & APPAREL EXPOSURE TO SHOCKS

RANK OF EXPOSURE TO SHOCKS; 23 = MOST EXPOSED



SOURCE: MCKINSEY GLOBAL INSTITUTE

Apparel's Risky Business

Apparel is one of the most exposed industries to shock as factories cope with worker safety issues and financial distress from low consumer demand, says a *Business of Fashion* report.

Of 23 industries surveyed, apparel has the second-highest level of exposure, topped only by communication equipment, the report says. The labor-intensive nature of the apparel value chain, as well as its geographic footprint, increases its exposure. Many apparel exports come from Bangladesh and Vietnam, which are subject to heat stress and flooding.

Over the course of a decade, companies in most industries can expect a single production shock lasting 100 days to wipe out between 30% and 50% of one year's earnings before interest, taxes, depreciation, and amortization. For the average textiles and apparel company, that number is about 40%, finds the report.

Apparel also stands out as one of the industries with the largest share of total exports that could move to different countries (36% to 57% in apparel and 23% to 45% in textiles). While some

apparel production may nearshore to U.S. and EU markets, most will likely shift to Southeast Asian countries due to their competitive labor and overhead costs.

To cope with future risk, manufacturers should embed at least a baseline level of losses from disruption into their financial planning, the report says. This information can help apparel brands and retailers make better decisions on how to withstand future disruptions. Compared to other industries, apparel production has a lot of room to digitize and reap the benefits.



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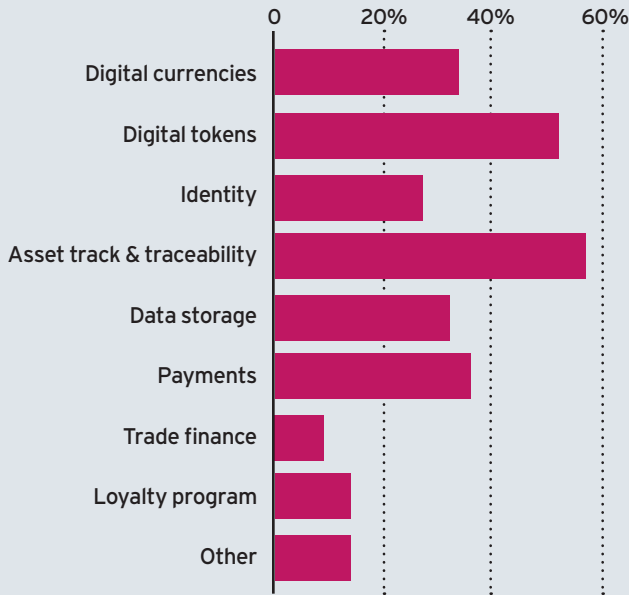


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SOURCE: 2020 SINGAPORE BLOCKCHAIN ECOSYSTEM REPORT

TOP BLOCKCHAIN APPLICATIONS AMONG BUSINESS LEADERS



Building a Case for Blockchain

Asset-tracking and traceability are the top uses for distributed ledger technology (*see chart*), highlighting the need for improved management as supply chains evolve from linear models to multitiered networks, says a PwC report.

About 52% of business leaders say asset-tracking and traceability are the best applications for blockchain technology. Among those respondents, 52% identify trade finance as another major application. About 30% of respondents indicate four or more applications, indicating blockchain use cases are interrelated, the report says.

Tracking is consistently cited as a major use case of blockchain technology because supply chains have evolved into multitiered networks of suppliers, partners, and customers, the report says. Nearly 50% of respondents say blockchain adoption will grow in the next three to five years, and companies are optimistic about those prospects, says PwC.

Find and Fight Forced Labor

The following strategies can help shippers reduce their risk of unknowingly using forced labor in their supply chain, says Danny Shields, vice president of industry relations at risk management company Avetta:

Warning signs: Determine if forced labor is part of your supply chain—at any level. Social media can help monitor what people say about your company and suppliers. Use social listening technology to identify issues early and intervene where needed. Analyze regulatory filings and databases to see which companies in your supply chain are most at risk.

Assess risks: An effective risk assessment program involves identifying critical areas and planning accordingly. The most important step is creating a strong strategy concerning contextual factors—certain geographies, industries, and forms of forced labor. This knowledge maps activities and provides assessments about partners,

contractors, and suppliers who should be scrutinized further.

Audit overseas suppliers: A business can be held accountable for the actions of their contractors abroad. Audit overseas suppliers and contractors on their ethical and human rights practices, including health and safety, rates of injury, and contraction of diseases.

Prequalify contractors: Create a prequalification process for suppliers and contractors. Establish benchmarks with regional regulations and internal policies to prevent forced labor practices. The right technology can provide procurement, sustainability, and health and safety risk-based data on their suppliers.

Use technology: Nearly 58% of organizations do not use any form of technology to track second- and third-level suppliers and their relationships. Companies can use predictive analytics to evaluate supply chain activities and pinpoint areas of forced labor.

Dollar Value of the Top 5 Products at Risk of Forced Labor

\$200.1 B

Laptops, computers & mobile phones

\$127.7 B

Clothing

\$12.9 B

Fish

\$3.6 B

Cocoa

\$2.1 B

Sugar

SOURCE: GLOBAL SLAVERY INDEX

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TAKEAWAYS

U.S. Policies That Can Strengthen Recovery

The Biden-Harris administration will have an opportunity to strengthen supply chains and position the United States as a go-to partner for COVID-19 recovery, says a report from Baker McKenzie and Atlantic Council. This is how they can advance policies that help supply chains withstand major disruptions, the report says:

- Expand U.S. commercial ties in Latin America to generate jobs in the United States and in the region. With more

free-trade partners than anywhere else in the world and proximity, the region is a promising platform.

- Nearshoring in the Western Hemisphere, where businesses will find similar time zones and proximity to domestic and regional markets. Mexico, Colombia, and Central America are in a unique position to take advantage of this opportunity.

- Analyze existing trade agreements to ensure that implementation takes

advantage of the free flow of commerce intended in the original agreement. If technical barriers impede commerce, they should be rapidly addressed.

- Better utilize the web of Western Hemisphere agreements, with more efficient harmonization that facilitates intraregional and U.S. trade.

- Create formal institutional tools to ensure common agreement among industries in case of

another disruption, such as updating the 2012 North American Plan for Animal and Pandemic Influenza to include a chapter on supply chain protection.

- Invest in physical and digital infrastructure. Through a development finance corporation, the United States can better support private-sector efforts to upgrade roads, rail, and deepwater ports, as well as expand broadband and internet connectivity.



A partnership of trust and transparency.

At Syfan, our commitment to shippers remains steadfast and true. The demands of COVID have created a shortage of carriers and tight capacity that have strained partnerships with some shippers – but not Syfan Logistics. Throughout the challenges of the past year, Syfan has not wavered from standing by its customers and continuing to provide drama-free service.

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Shifting Supply Chain RISKS

The new threats that the pandemic posed to supply chain security, continuity, and resilience exacerbated the traditional risks supply chains face every year. Leaders should be aware of the following vulnerabilities in the year ahead, according to a report from BSI:

- **Cargo thefts increased.** The goods targeted shifted to match in-demand products such as personal protective equipment, hand sanitizer, and medical supplies. More criminals targeted food and beverage commodities and alcohol and tobacco, likely due to increased value resulting from panic-buying and shortages. Warehouse facilities where these items are stockpiled may continue to be targets for theft.

- **Port security faced new challenges.** The global decrease in flights combined with closed borders have made it more challenging for cartels to illegally traffic drugs, so they found new routes for illegal activity. This shift created challenges for operators in impacted regions, threatening port security and other drug introduction points to cargo across the globe and will continue to do so in the year ahead.

- **Political protests continued throughout the year.** Protests were exacerbated by governments' COVID-19 responses in many regions, creating larger demonstrations that often impacted ground transportation and caused delays at checkpoints. Shippers should be aware of potential threats to operations resulting from political protests into 2021.



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TAKEAWAYS

GRAPE EXPECTATIONS:

Wine Quality Control

The global wine industry is complex and interconnected, but lacks the tools to properly optimize its supply chain. To improve transparency for producers, distributors, retailers, and consumers, IBM and eProvenance released VinAssure, a blockchain solution that tracks wines as they move from the vineyard to the end-consumer.

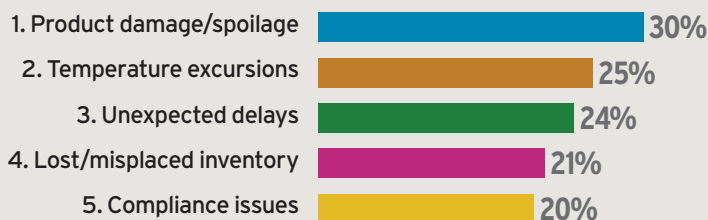
By encouraging transparency, accountability, and rapid data exchange, VinAssure helps preserve the exacting methods of winemakers by identifying errors during transit. eProvenance's algorithm determines if the wine is still fresh or if its quality has been compromised, and a resulting score from 1 to 100 indicates any changes in quality. VinAssure uses IBM Blockchain Transparent Supply, which enables organizations to create a permanent record of the history of their physical and digital assets.

It is also designed to provide consumers with information about the wine they're drinking. Using identifiers such as a QR code on the bottle, consumers can learn about the wine's provenance and flavor profiles, or whether it meets certification standards for organic practices, IBM says.

The first member of VinAssure is De Maison Selections, a U.S. importer of responsibly sourced wines, cider, and spirits from Spain and France. Other members intending to join include Ste. Michelle Wine Estates, Export Division, and Maison Sichel. These companies represent millions of bottles of wines moving through the global supply chain, IBM says.



TOP 5 SUPPLY CHAIN CHALLENGES IN THE PHARMA AND FOOD & BEVERAGE INDUSTRIES



Keep Your Cool

Product damage or spoilage, which most often occurs in transit, is the No. 1 supply chain challenge for the pharma and food and beverage industries (*see chart*), according to a Cloudleaf survey. This highlights a great need to maintain visibility throughout a product's journey once it leaves the warehouse.

Most (87%) survey respondents in the pharma industry say they don't have 100% visibility into the condition of products during the last mile, and nearly half of respondents claim to use manual processes to achieve visibility. In transit to distribution was unanimously the most likely point for spoilage to occur, Cloudleaf says.

Products are easier to control during the initial phases of distribution because they sit in local storage before shipment, the report says. The more handlers and transitions there are when the product leaves the warehouse, the less visibility there is, which increases the chance of spoilage.

Pharma industry respondents lost \$95 million per year in medical inventory due to spoilage caused by cold chain failure. They lost 202,600 doses of medical inventory annually on average, with 6% losing 1 million doses or more, the report says. On average, \$71 million in fresh food is lost per year due to cold chain failure. This reaches \$179 million for companies with 1,000 or more employees.

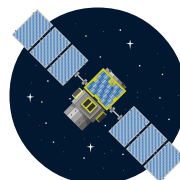
Complete visibility means having a clear understanding of where products are at each point in the supply chain, what condition they're in, whether they're in compliance with regulatory requirements, and whether they will arrive on time and in the same condition as when they were shipped, Cloudleaf reports.

SHOOTING FOR THE MOON

In another step toward making the world your warehouse, the FCC awarded SpaceX nearly \$900 million in federal subsidies to support broadband customers in remote U.S. areas through its Starlink satellite internet network.

The subsidies are an incentive for broadband providers to bring service to underserved areas, and will be distributed in the next 10 years. The FCC plans to target partially served areas in a phase II auction.

Starlink is SpaceX's initiative to deliver high-speed internet anywhere on the globe. Its beta test in October 2020 had service priced at \$99 a month, and a wider beta test is set for early 2021. SpaceX won subsidies to bring its service to 35 U.S. states. The company started working with organizations in rural regions that Starlink satellites currently cover, including Washington state.





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DISCOVER THE WSI DIFFERENCE

TAKEAWAYS

WHAT'S THE RUSH?

CRRC, a state-owned rolling stock manufacturer in China, released the world's fastest cargo trains, which can reach a speed of 217 miles per hour. The carriages will be used in freight transport with a range from 370 to 930 miles.

The coaches can carry at least 110 tons of cargo, and the related utilization rate is 85%. The units have been installed with 9.5-foot-wide doors, resulting in the widest cargo train exits. The high-speed trains feature mobile data connectivity and use China's BeiDou Navigation Satellite System to help load and unload cargo accurately.



INDUSTRY 4.0 IN THE CLOUD

SAP and Microsoft expanded their partnership to enable customers to design and operate intelligent digital supply chain and Industry 4.0 solutions in the cloud. Businesses can now use a set of SAP digital solutions such as digital manufacturing, intelligent asset management, and integrated business planning solutions on Microsoft Azure.

SAP will use Microsoft Azure to run these solutions in a software-as-a-service (SaaS) model that can help reduce customers' need to manage the software and underlying infrastructure. They can scale globally by leveraging Azure, which offers compute, storage, and network services to support performance and business continuity to run SAP digital supply chain solutions.

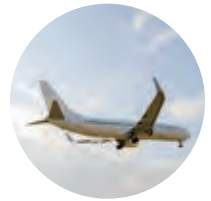
SAP and Microsoft are also collaborating to make SAP solutions available on Microsoft Azure Stack Edge. This helps manufacturers process data locally across machines and control systems to address latency or connectivity restraints. Customers can choose to use Microsoft Azure IoT or SAP IoT to bring their time series data to the cloud.

Amazon Airs Out Its Fleet

Amazon is buying 11 used Boeing 767-300 jets from Delta and WestJet as part of its rapidly expanding air cargo operation. This is the first time it bought, rather than leased, planes for its fleet, Forbes reports, and is a sign of increasing demand for fast delivery during the pandemic. Amazon says its cargo fleet will reach 85 aircraft by the end of 2022.

The four aircraft from WestJet are being converted from passenger to cargo use and are expected to join the Amazon Air network in 2021. The seven planes from Delta will join the fleet in 2022, Amazon says, adding that it will continue to rely on third-party carriers to operate the new aircraft.

Amazon has been growing its air cargo fleet through leasing agreements to enhance its ability to deliver packages to consumers as quickly as possible. The company's expansion coincides with airlines trying to cut costs as pandemic restrictions leave seats empty, the report says.



TaylorMade Expansion

Merger and acquisition activity in the third-party logistics sector continues to grow. In a major expansion, Taylored Fulfillment Services acquired the U.S. operations of Toll Global Logistics, a \$8.7 billion Australian logistics company. Brian Southwell, vice president of business development and marketing, and Margaritta Topielski, chief administrative officer at Taylored, discuss the buyout with *Inbound Logistics*.

IL: What are the details of the buyout?

The buyout includes additional facilities in Los Angeles and Long Beach,

New Jersey, and Miami as well as the distribution hotspot of Louisville, Kentucky. With the acquisition, we were able to add more than 200 employees to our payroll within various functional areas, including 98% of our warehouse staff.

IL: What are your integration plans?

Although all our back-office functions will be integrated into the Taylored systems, we were able to utilize the best practices and best software/tools existing in both organizations. The plan is to implement already existing automations in the current Taylored facilities into the newly acquired locations.

IL: How will shippers and customers benefit from the acquisition?

The acquisition allows customers to

have a one-stop shop for all their logistics needs, providing them with warehousing, fulfillment, and transportation handled by the same service provider. While Taylored focuses on retail/e-commerce fulfillment, the combination of the companies will add a port-centric focus, including transload and cross-dock services with additional transportation capabilities. It also gives existing clients the ability to utilize our services in new markets.

IL: Is the buyout a base for expansion?

The buyout not only expands the services Taylored provides, but it also will increase the total footprint to more than 4.1 million square feet of Tier 1 distribution space.

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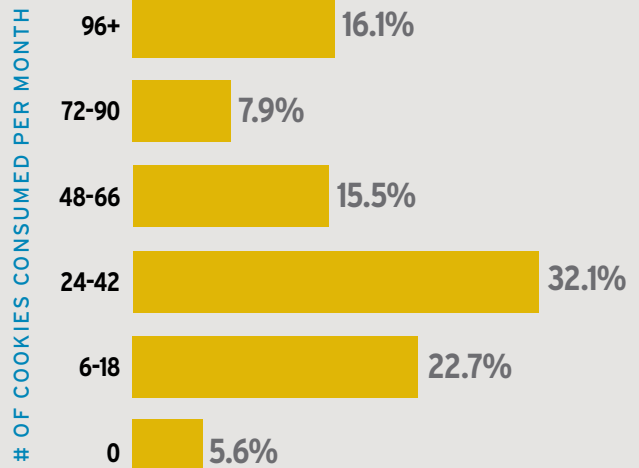
EATING UP COOKIES

A cookie shortage is leaving cookie jars empty and taking a bite out of food supply chains. Campbell Soup, maker of Pepperidge Farm cookies, faces supply constraints in its cookie division due to labor shortages and elevated demand as consumers stay home during the pandemic, according to the company's earnings call.

While Campbell ramped up its soup and Goldfish crackers production to meet consumer demand, it's harder to increase cookie production because they're made with proprietary recipes, Campbell says, and so it does not use third-party manufacturers to make them.

These constraints coincide with surges in demand, with Pepperidge Farm's cookie demand up 8.7% in the 13-week period ending on Nov. 1, 2020, Campbell said. Cookie demand in the United States has surged by 25% during the pandemic, with about one-third of Americans eating 24 to 48 cookies a month, according to Top Data's research (see chart).

AMERICANS CHOW DOWN COOKIES DURING COVID-19



SOURCE: TOP DATA



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TAKEAWAYS

SWIPE RIGHT: MAKING FREIGHT MORE ATTRACTIVE TO CARRIERS

Securing freight capacity can be challenging, especially during a shortage. When carriers have options at many locations, it's important to make your freight as attractive as possible to increase acceptance rates. Logistics provider Schneider recommends you check off these boxes to make your freight more attractive:

- ✓ **Make loading and unloading efficient.** At-the-ready gate guards, clearly marked signage, staged loads, and prepared paperwork help drivers enter and exit the facility efficiently.
- ✓ **Make amenities accessible for drivers.** If drivers need to spend time at your facility waiting for loads, make sure restrooms, break areas, and safe designated parking are readily available.
- ✓ **Allow flexibility for pickup and delivery.** Shippers offering weekend pickup and delivery along with more appointment options will increase the likelihood of attracting a truck in a tight market.
- ✓ **Improve freight characteristics.** For asset providers, drop and hook freight along with preloaded shipping containers are more appealing to drivers and carriers deciding which freight to pick up.
- ✓ **Provide forward visibility.** Freight is more attractive with 3 to 5 days of lead time, at least 24 hours of advanced notice of load ready times, and accurate surge forecasting.
- ✓ **Minimize load changes.** Frequent load changes, cancellations or short lead times can negatively impact carrier planning. Allow carriers to suggest alternate pickup or delivery times to help secure freight capacity.
- ✓ **Maintain smooth volume of freight.** Consistent freight patterns throughout the week help providers get a reliable flow of equipment into and out of a facility and enhance supply chain efficiencies.
- ✓ **Offer regional networks.** Evaluate your supply chain to assess whether or not there are freight patterns that can be optimized for round trips, or consistent flows within your network. Freight that represents a leg in a round trip has an extremely high chance of being dispatched in order to take advantage of the rest of the trip or tour.



Some Kombucha With Your Cricket Protein Bar?

From more transparent packaging to eating insects, Thomas Insights reports the food trends that suppliers should anticipate in 2021:

- **Transparent packaging.**

The pandemic has led to increased biosafety concerns about food. Trends will include an increase in transparent windows in food packaging that allow consumers to assess product quality, as well as QR codes that verify ingredient claims.

- **Sustainable products.** More than two-thirds of consumers want their everyday actions to have a positive impact on the environment. This includes a shift toward plant-based proteins. More food suppliers will upcycle underused ingredients to reduce food waste.

- **Healthy living.** More than half of U.S. consumers care more about the healthfulness of their food in 2020 than they did in 2010. Demand for superfoods, probiotics, and supplements will grow in 2021, with many suppliers already incorporating ingredients like vitamin C.

- **Insects.** About 2.5 billion people worldwide regularly eat cooked or raw insects. While U.S. consumers still shun the concept, attitudes are expected to shift with several startups, such as Exo cricket protein bars, securing significant funding.

- **Kombucha.** Kombucha is a fermented tea drink that first hit the mainstream in 2018, and has been growing in popularity since then. It's gluten-free and can be filled with live probiotic cultures.

- **Boxed wine.** Consumer appreciation for boxed wine will return. It's easier to store, cheaper to transport, generates half the carbon emissions, and has a longer shelf life than bottled wine.

- **Celebrity alcohol.** It's all about Brad Pitt's rosé and Cara Delevingne's prosecco as alcohol brands and vineyards look to drive revenue by partnering with celebrities.

- **Alternative oils.** Whole Foods Market predicts consumers will experiment more in their use of walnut, pumpkin seed, and sunflower seed oil over traditional options.

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For nearly 25 years, this section has engaged and enlightened with expertise and insight from industry insiders and leading contributors. Tackling the challenges confronting shippers today, from leveraging data to rooting out inefficiencies, Logistics Knowledge Base provides impactful advice and actionable takeaways. Get the information you need from today's logistics leaders to drive transformative change at your enterprise today.

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Data Management—Vital Today!



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Managing information gathered from a strong TMS provides a solid pre-audit program to double-check the accuracy of bills and also delivers these value points.

Years ago, I named my business "Freight Management," but today it should be called "Data Management," since that seems to be the business in which we find ourselves.

Driven by competitors, by our clients, and by our own imagination, the effective collection of information can be invaluable if properly used and directed.

There are value points in managing information gathered from a strong TMS system that can also provide a solid pre-audit program to double-check accuracy of bills before payment. These points include:

1. Tracking the duty paid on imported items with an eye to how much then reships to Canada, or falls into other categories, which will allow you to regain much of the duty paid.

2. Having visibility of all shipments moving inbound or outbound until delivered. This information can be pushed or retrieved. This assumes that the freight is tendered by the shipper, or by the vendor, via the TMS that picks the approved carrier for the speed and distance of the shipment. The TMS usually notifies the carrier electronically and a bill of lading is prepared for printing for the consignee.

3. Out-of-region freight moving from a warehouse outside the service zone is costly and a good TMS reporting system will identify these types of occurrences. Additionally, it should identify what SKUs are involved and how frequently it happened in the past week or month. All of this adds extra costs to the bottom line.

4. Double/triple orders moving the same day to the same customer can be identified and allow steps to be taken in the future to consolidate such orders onto one bill of lading, not two or three.

This typically happens when you have many items for sale and a customer such as Walmart will create an order for each one, which then triggers a bill of lading for each. In some cases, they insist on a bill of lading for each PO. A master bill of lading can overcome this need, which includes all the individual bills of lading onto one transaction. Additionally, carriers will even consolidate the orders and then send one bill.

5. How often is the shipping staff or the vendor using the wrong carrier for the size, speed, and distance of the order? This, too, can be expensive, and it is good to know when this occurs and where the failure is occurring.

6. Sometimes freight costs rise, and you may not be sure why. A good TMS should provide a report on all shipments for any period of time with average mileage, average weight, and cost per pound. Maybe freight order size is down, which will tend to raise the cost per pound, or orders are simply farther away than normal.

7. Identifying when accessorials (which are logged and summarized) of a given type are spiking. This could mean more home deliveries, more inside deliveries, etc. Counter-action can then be taken to mitigate the costs.

8. Defend against charge back from the major retailers. This is now a major profit center. Allegations of late arrival, etc. are charged against you. A good TMS provides status and location of all shipments during the move, which will help that defense.

9. Develop a report card on all carriers for on-time delivery, claims ratio, or other factors

10. You can also chart the cost of fuel month to month, so you can better see the trends and prepare yourself or your customers.

11. By receiving a delivery receipt from the carrier, the process for filing claims for loss and damage is made easier and more accurate.

12. Finally, a good TMS will provide accurate accrual reports at the end of the month.

However, all open orders across all modes must reside in it. The TMS can then calculate the charges you can expect from the carrier even if not billed or received yet.

Freight Management has such a TMS, and additionally the staff to manage it. Data management has become our main business.



Is the Logistics Sector Ready for the COVID-19 Vaccine?



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The last mile will have to accommodate the reliable distribution of the billions of vaccines that providers will manufacture and ship in 2021. Here are the obstacles facing the supply chain.

The December peak season brought a new set of challenges. As COVID-19 vaccines received FDA approval in late 2020, logistics operators faced the daunting task of distributing vaccines around the world. While the FDA was able to fast-track the approvals process and many vaccines have already shipped, changes in the last mile are still ongoing to accommodate more reliable distribution of the billions of vaccines that providers will manufacture and ship in 2021.

The supply chain faces the following obstacles:

1. Supply Chain Cold Storage

Vaccines require proper storage conditions at all points in the supply chain to ensure their efficacy when they reach the patient. This isn't usually overly challenging—the flu vaccine requires refrigerated storage between 35°F and 42°F, for example.

The leading COVID-19 vaccine has more stringent requirements. The Pfizer and BioNTech mRNA-based vaccine requires cryogenic storage below -90°F. Cold storage has been underserved in global industrial real estate for decades, and cryogenic cold storage even more so. Low availability makes it difficult to regionally distribute and store vaccines.

Other leading vaccines, such as Moderna's mRNA vaccine, have more standard storage requirements and last up to six months in a standard freezer. Ideally, ongoing upgrades to last mile capabilities and varying storage requirements between vaccine types will be enough to avoid significant disruptions in vaccine distribution.

2. Dry Ice Shortage

Due to a lack of cold storage availability, Pfizer ships directly to health agencies and hospitals. Storing vaccines at appropriate temperatures is challenging enough for the supply chain, but near impossible for the medical facilities where patients

will receive the vaccines. Once removed from cryogenic storage, the vaccine lasts about five days.

The solution to this problem is special packaging from Pfizer, which can maintain appropriate cryogenic storage temperatures for up to 30 days if refilled with dry ice every five days. Dry ice is typically created by freezing CO₂ byproducts recovered from oil and gas and ethanol production. These sectors have been making less fuel over the past year because of the pandemic, resulting in less available CO₂ needed for dry ice production.

3. Distributing Related Equipment

The medical supply chain still hasn't recovered fully from the shortage of personal protective equipment (PPE) it experienced in early 2020 at the onset of the pandemic. Many medical professionals still struggle to reliably source N95 masks, gloves, face shields, gowns, and other critical PPE needed to protect medical workers as they vaccinate the public.

In addition to the standard PPE, the vaccine rollout has caused a rush on other ancillary gear needed in vaccination operations, such as alcohol wipes, syringes, needles, and bandages. While manufacturers of these goods fortunately had time to prepare, it's currently unclear how well the supply chain will hold up to long-term vaccination efforts over the next several months.

Bending But Not Breaking

The supply chain has been preparing for this moment since successful vaccine development began to appear likely. Logistics providers, airlines, ground carriers, healthcare networks, and manufacturers have all come together to find innovative ways to bring vaccines from the production floor to the people who need them.

While vaccine distribution isn't without its obstacles, 2021 still looks much more positive than the year before.



Bringing Transportation in Sync with the World



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True digital transformation requires the ability to think beyond the next load or the next order to find new and enduring ways to match demand with capacity and connect relevant industry partners.

In the transportation world of today, nearly 30% of trucking capacity sits idle while approximately 20 billion empty highway miles are generated each year. Transportation is a mission-critical industry for the growth of our economy and, as we've seen this year, critical to even maintaining our basic standards of living—but it's also an industry that's crucially under-served by modern technology.

Identifying Inefficiencies

Transportation can be a highly reactive and slow-moving industry with inefficiencies that are often compounded by destructive bullwhip effects.

It's an industry with players that make considerable margin by creating and protecting information asymmetries, and players who often base their decision-making on gut feelings, past experiences, and established relationships.

All this is happening in a world that has already moved to a state where sustainability matters more than ever before, where cost and efficiency are important, and competition is fierce.

It's happening in a world where digitization, the Internet of Things, and broad mobile communication are spreading rapidly. Today's modern world is a world of transparency and equal opportunities, of Big Data and AI-driven optimization algorithms, of real-time visibility and agility, of seamless information flows and complex networks.

Shifting Strategy

Global manufacturing has faced some of its biggest challenges throughout the last year. Unprecedented demand in some sectors has forced a collective shift in strategy in order to keep pace with the immense changes across the supply chain—mainly in the form of digital transformation.

Many organizations have quickly pivoted to new ways of doing business, but a significant gap still remains between the state of the transportation industry and the world we live in today.

Although the number of manufacturers looking

to creatively bridge this gap has never been greater, true digital transformation requires the ability to think beyond the next load or the next order to find new and enduring ways to match fluctuating demand with constrained capacity and begin to connect relevant industry partners in the most efficient ways possible.

Transforming Supply Chains

True digital transformation means tearing down the walls that keep this industry so out of sync with the modern world.

Digital transformation generates upsides rather than downsides—by creating the perfect backload that benefits both shippers and carriers, by connecting parties through smart interfaces and a powerful platform.

Bringing transportation up to speed with the modern world means simply using available data and building intelligent algorithms that help us make smarter, faster, and more efficient decisions.

By enabling frictionless added-value networks that strive to connect the ideal shipper with the ideal carrier, we can tear down the information walls that keep us out of touch and find new, more efficient ways of working together as an industry.

We can sync transportation up with the modern world by simply enabling everybody in the process chain to collaborate infinitely—without borders, without boundaries—today, tomorrow, and every day.

Transporeon boosts logistics performance and profitability with every freight load. Founded in Germany in 2000, Transporeon connects a worldwide network of more than 1,200 industrial shippers and retailers with over 90,000 logistics service providers in 100+ countries in real time. Its security-certified platforms offer digital solutions for freight benchmarking and sourcing, freight assignment and shipment execution, time slot management, shipment tracking, and end-to-end supply chain visibility. By leveraging the latest capabilities, including artificial intelligence and predictive analytics, Transporeon solutions cut CO2 emissions, empty runs, and truck waiting times while digitizing manual processes.

Inventory Management: Two Key Indicators to Improve Warehouse Operations



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Your warehouse is your company's barometer: It measures the health of your sales, as well as its fluctuations. That is why good inventory management, including optimizing the flow of goods and sales forecasting, becomes essential if you want to avoid product shortages and overstock. Monitoring the turnover and coverage rates will help you limit the risks related to demand fluctuations and help achieve a balance between inventory turnover and supply.

Turnover Rate: Measuring the speed at which the inventory is replenished

To calculate Turnover Rate use the following formula:

$$\text{Total (period X) Demand} / \text{Average Inventory} = \text{Turnover Rate (TR)}$$

In order to make this calculation you must first determine your "average inventory." This metric can be calculated as follows:

$$(\text{Initial Stock} + \text{Final Stock}) / 2 = \text{Average Inventory}$$

The above formula allows you to calculate the average inventory without factoring in the observed growth or decline over a longer time span. To include these variables, use the following formula:

$$\text{Average Stock (Monthly)} = [[(\$1 + \$2) / 2] * 3 \text{ months} + [(\$3 + \$4) / 2] * 2 \text{ months} + [(\$5 + \$6) / 2] * 2 \text{ months}] / 7 \text{ months}$$

The average inventory and the turnover rate will help avoid product shortages and overstock by giving you a general idea of the inventory replacement rate at any given time. Keep in mind that a high turnover rate is a sign of excellent performance.

Coverage Rate: A daily overview of your inventory

Centralizing your products as best as possible and directing them to the right stores based on sales performance is key. To avoid having to replenish a store that has exhausted all its inventory, it is best to keep your coverage rate in mind.

Assuming you have covered your needs with a well thought out supply method, you can manage the just-in-time flow without worrying about the stock shortages. You should then be able to calculate the average period covered by the inventory with the following formula:

$$\text{Average Stock per Month} / \text{Average Monthly Demand} = \text{Coverage Rate (CR)}$$

When calculated correctly, this indicator allows you to strengthen your supply chain with the right stocked products, at the right quantity, at the right time—thus providing better coverage in response to the demand.

Prevention is Better Than a Cure

If you have opted for a just-in-time model, calculating the coverage rate and the turnover rate is an excellent way to add resiliency to your supply chain. However, to do this you will need a solution in which you can accurately track data in real time.

Generix Group North America provides a suite of solutions within its Supply Chain Hub to create efficiencies across the entire supply chain. From Warehouse Management Systems (WMS) and Transportation Management Systems (TMS), to Manufacturing Execution Systems (MES) and more, their highly agile software platforms can deliver a wide range of benefits that ultimately lead to significant increases in operating efficiencies.

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Pandemic Spurs Accelerated Investment in Supply Chain Automation, Digital Technologies



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Digital technologies and automated solutions will help your supply chain succeed in this new, post-pandemic reality. For starters, they increase resilience in the face of disruption and support your workforce.

The unprecedented impact of the COVID-19 pandemic has permanently changed the trajectory of businesses, consumers, and supply chains. Organizations that accelerate the implementation of digital and automated technologies to increase their visibility, flexibility, adaptability, and responsiveness are best positioned for success.

Artificial intelligence (AI) and machine learning (ML) are increasingly being applied throughout supply chains. These solutions help organizations of all sizes synthesize massive amounts of data, then evaluate various scenarios and situations in nanoseconds to extract actionable information in real-time.

Algorithmic AI and ML allow workers at all supply chain levels to further leverage innately human skills such as collaboration, negotiation, persuasion, and problem solving, which are not likely to be replaced by digital technologies.

For example, these solutions digitize the decision-making process, yielding increased supply chain visibility and agility through better risk management. They do this by comparing multiple scenarios to predict the most likely outcomes, then generate options for supply chain leaders to assess and select the best course of action based on the business rules and objectives of the company.

Further, AI and ML can be used to examine external data, such as news and social media feeds. By monitoring for terminology that suggests a potential disruption in a given area—labor strikes, natural disasters, extreme weather, political unrest, port fires—the technologies create an alert, enabling an operation to counteract a potential supplier issue.

In the warehouse and distribution center, AI and ML are increasingly being leveraged within collaborative robotics, autonomous mobile robots, and automatic guided vehicles. These machines are not replacing human workers, but rather are taking over mundane, repetitive, tiring, error-prone, or dangerous tasks—such as manual sortation or long-

distance travel for picking. This enables personnel to advance into higher value, higher margin tasks that keep them engaged. It also allows operations to safeguard worker health.

Roadmap to the Future

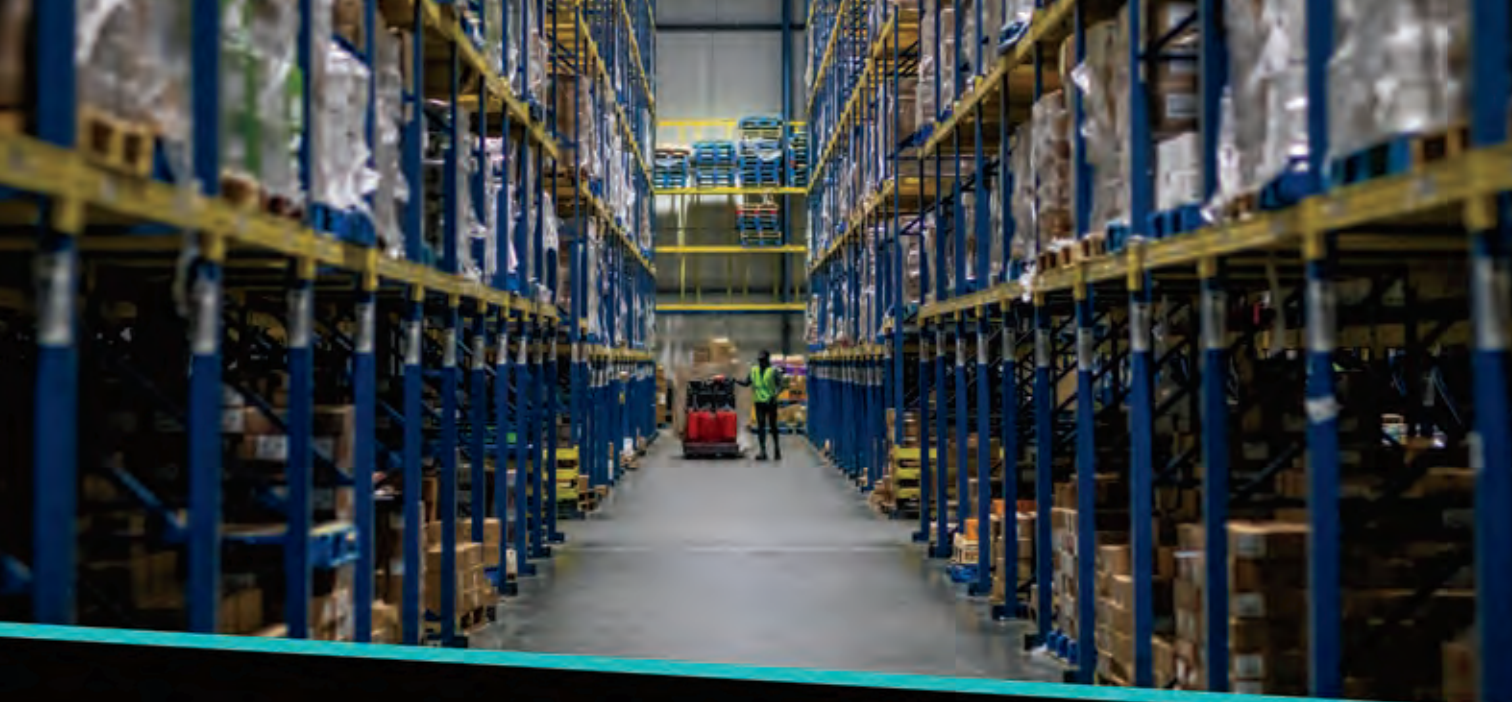
These are just a few ways that by teaming humans with digital and automated technologies, organizations experience greater gains through cost reductions, increased efficiency, and higher value. Other examples can be found in MHI's most recent future-looking Roadmap publication, "Transformation Age: Shaping Your Future" (available online at mhi.org/transformationage).

Additionally, other accelerated technology and digital investments include Cloud computing as a means to support faster collection and analysis of data from multiple sources within a network. Those sources include not only Tier One suppliers, but increasingly Tier Two and Tier Three. They also encompass a wealth of operational data enabled by Internet of Things (IoT)-connected devices and sensors.

How will these digital technologies and automated solutions help your supply chain succeed in this new, post-pandemic reality? One way to find out is by participating in ProMatDX—the most comprehensive digital manufacturing and supply chain experience in 2021. ProMatDX sponsors will display the latest technologies and solutions that support digital supply chains.

ProMat is scheduled for April 12-16, 2021 at promatshow.com. At ProMatDX, you'll experience the latest automation, technologies, and innovations helping companies power up their supply chains in sponsor showcases, product demos, educational sessions, and keynotes. Many of the solutions discussed here will be on display, including sensors, Cloud computing, autonomous vehicles, robotics and automation, predictive analytics, AI, ML, wearables, mobile technologies, and much more.

For more information or to register, please visit promatshow.com.

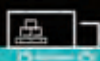


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Keeping Your Eye on the Prize: What Formula One Can Teach Us About the RFP Process



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Bid management software is like a team boss, acting as the face—or rather, interface—of the complex data streams racing through your network.

Formula One (F1) is arguably the most data-driven sport that exists. Cars are equipped with approximately 150 sensors that generate 2,000 data points/minute—including tire performance, track temperatures, steering and braking patterns, and more. That amounts to roughly 4 terabytes of data per car per race. All this data is used to drive fast decisions on the track, where every second counts.

Fast decision-making is also vital in business, so what can we learn from F1 teams about carrier procurement? In both racing and bid management, steering toward a successful outcome takes more than a skilled driver or purchasing manager. It takes a reliable network, powerful technology, and rapid-fire data exchange.

Data-Driven Decision-Making

Before data analytics became a key component to F1 races, winning or losing depended on the driver's split-second decisions on the track. Now, decision-making is largely driven by technology, allowing drivers to focus on their core competency—driving.

Imagine if an F1 driver had to plot fuel management mid-race. How would that extra work impact their performance?

The driver at your organization is the person making procurement decisions. Selecting the right carriers for the right rates while covering commitments can be a challenge. It often involves massive lane spreadsheets, manual data entry, and mismanaged carrier relationships. Procurement decision-makers can lose focus—getting caught up in organizing Excel files instead of making decisions that lead to ROI. Like F1, technology can do most of the work for you.

Watch any F1 race, and you'll see team bosses staring at monitor banks while issuing instructions to the drivers. What may not be immediately clear is that those bosses act as the face of robust data streams flowing in from mission control centers full of race engineers.

Bid management software is like a team boss, acting as the face—or rather, interface—of the complex data streams flowing through your network. You collect massive amounts of data every day, but if you don't have the right tool for analyzing that data to drive decision-making, you may be wasting valuable time.

An Empowered Network

F1 pit crews are notoriously efficient, and the best can change a car's tires in under two seconds. Something else that should take seconds? Adding carrier rates to your master response list.

Too often, shippers will send out RFPs, collect responses one by one, and manually add those responses to a master Excel document. This workflow is like a driver pulling into a pitstop and changing the tires himself.

When sending RFPs, if you are spending time re-entering the rates that carriers send back, your time isn't being used wisely. Bid management software can collect responses automatically within seconds of the carrier submitting them, which allows you to focus on strategic initiatives with the time saved.

In racing and business, efficiency is key. When managing your next RFP, make sure you have the right tools in place that eliminate inefficiencies and allow you to keep your eye on the prize—finalizing and executing the routing guide.



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

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

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

Thought Leaders

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Strategic Advisor, UCBOS

66 SENTHIL MURUGAIYAN
VP, Services
ITOrizon Inc.

67 DAVE MADDOX
SVP, Sales Supply Chain
nVision Global

68 HANNAH TESTANI
Chief Operating Officer
Intelligent Audit

69 CHAD CROTTY
VP, Sales
DDC FPO

70 VIJAY NATARAJAN
VP, Solutions
MPO

71 RAUL ALFONSO
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72 CLARK CASSELL
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Engineering Innovation

73 LARRY HARGREAVES
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Agility, Data, and No-Code: Three Trends for the Future

Q: *How are new technologies shaping the future of the supply chain?*

A: Advances in data integration, IoT, machine learning, and artificial intelligence are changing every part of the supply chain. These technologies can link systems and enable you to:

- Deliver better customer experiences with end-to-end order data and item status from multiple systems.
- Automate changes in store allocation based on real-time consumer behavior and inventory.
- Dynamically reallocate warehouse resources based on capacity and inbound sensor data.

Adopting these technologies will bring new ways of solving problems and require new capabilities.

Q: *What is the best way for organizations to take advantage of these technologies?*

A: Putting these new technologies into action goes beyond just installing them. Here are three trends that can shape how organizations can make the most of these advances:

Agility — *flexibility for your teams and processes.* Agile tools and agile planning can help teams manage and maintain control in changing environments. Organizational approaches like the Composable Enterprise can create core business capabilities instead of outcomes. This agility is key in allowing teams to execute locally, in real-time, while staying in sync with the enterprise.

Data — *integrating and putting data into action.* Ever-increasing volumes and variety of data are being generated across the supply chain. Teams at

every stage of the process need access to this data to gain visibility and act. New technologies such as artificial intelligence require this data to predict and prevent. Tools that map data to universal business concepts while maintaining data integrity, like those included in the UCBOS platform, can meet this complex challenge and ensure that every part of the organization can rely on the data.

No-code — *enabling distributed teams to quickly create tailored workflows and tools with enterprise readiness.* No-code is an emerging technology to let end users create workflows and applications using re-usable components. This approach is much faster than traditional development or customizing existing applications. Moreover, it does not require critical technology resources. No-code systems that are paired with data integration tools, like the no-code platform UCBOS provides, can enable operational teams to create applications, automate critical business functions, and speed the adoption of new technology.

Q: *What is the impact of following these trends?*

A: Organizations that implement new technology with agility, data, and no-code will be able to amplify supply chain performance, alleviate risks, and predict outcomes today while laying the groundwork for the supply chain of the future.

UCBOS is a no-code platform to automate critical operations across the supply chain. Join the conversation on the key trends in supply chain—visit [UCBOS.com](https://ucbos.com). Join our webinar February 25, 2021, with seasoned supply chain professionals, as we continue our discussion on Agility, Data, and No-Code.



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THOUGHT LEADERS

Scaling SCM Ecosystems— Boardroom Insights



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Q: *Can you reflect on your last customer transformation experience and the takeaways from that engagement?*

A: Modernizing ecosystems while keeping up the ongoing business operations is the reality of every business. The current ecosystem, future solution expectations, and resource models are the drivers that determine the program's pace.

Practical challenges in the transformation include:

- Acquiring an explicit agreement, understanding, and alignment of the various systems, modules, and services supporting the business well, what systems must go, and the prioritized, critical, and nice-to-have are the crucial plan necessities.
- Assessing the existing ecosystems and solution footprint gives you an idea of solution complexity. The landscape of non-integrated solutions and numerous technology stacks has the risk of overhead. Building consensus in these areas is a big win for the project.

Q: *Do you have practical recommendations for a successful transformation?*

A: Focus on identifying core systems that must be changed. Major business system replacements always pose a substantial risk, but your business can mitigate risks in many ways, and the results are gratifying. Another approach is to start with peripheral systems and work toward the core systems. It is undoubtedly the lower risk and makes smaller wins.

A practical approach is identifying and beginning with the most

troublesome areas with the most significant pain points. Little wins help the team show progress, increase visibility, and increase the organization's support of the project and the team's ability to build on experience.

Irrespective of the approach that we take, change happens, and it is imperative to avoid forcing old processes into a new system as it stretches the timelines, creates gaps, and works against you.

Q: *Often overlooked, what parts of transformation fit this category?*

A: Due to the complexity of the technology stack within any client, we find a strong need for an independent orchestration layer. Keeping the integration layer independent of other systems and separate simplifies the solution complexity and aids future roadmaps.

In cloud programs, pay attention to physical devices when you move from on-premise to cloud. It is ideal for curating a reliable team, especially configuration experts. Still, teams often are outsourced to application vendors, but having a system integrator or in-house experts is a great asset.

ITOrizon offers a variety of pre-built, customizable transformation tools, which you can customize and tailor to your enterprise needs. As a system integrator, ITOrizon's team helps customers implement, manage, and enhance business applications. ITOrizon's team supports a mix of systems; commercial off the shelf software (COTS), custom in-house, striving to leverage customers' technology stack to meet and exceed their business expectations.

Build Supply Chain Resiliency with Digital Transformation

Q: *How has the pandemic revealed shortcomings in supply chains?*

A: The pandemic highlighted the need for a resilient supply chain. The companies that best weathered this crisis were able to make informed decisions and collaborate across their supply chain to minimize the impact of the disruption.

It's clear that adopting an integrated transportation management system delivers consistent ROI and helps create a resilient supply chain.

Q: *What are shippers missing out on by not using an integrated TMS solution?*

A: Companies that still use outdated, siloed systems for operations, transportation, and warehousing management lag behind in decision-making. It takes too long to gather data and respond appropriately. Shipments can't be tracked and diverted as necessary, regardless of the mode. In addition to basic shipment visibility, they're missing out on the benefits of advanced analytics and business intelligence.

They're also spending more on their transportation than they should. Rate data may be hiding in spreadsheets, so the freight doesn't move by the lowest-cost carrier option. They may be paying for the wrong freight class or excess accessorial charges. They could be missing out on load consolidation opportunities or using inefficient routing. It's more challenging to capture payment errors through freight auditing without easily accessible invoicing data.

Q: *How does a TMS deliver value?*

A: A reliable TMS is one piece of a broader intelligent supply chain—one that leverages big data, cloud technologies, and machine learning to unlock optimizations never before available to shippers.

With an integrated TMS, shippers can build incremental value via cost reductions of 0.5% here or 1% there through efficient operations. A TMS helps achieve those savings.

Q: *What factors should shippers look for in an integrated TMS?*

A: An end-to-end solution that manages everything from inbound purchase orders to outbound shipment execution and self-invoicing will make the most significant impact. A full-package solution like our IMPACT TMS takes over vendor compliance through the order book, contractual term compliance and benchmarking, auto-rating, auto-tendering, exception management, tender rejections, spot auctioning, and freight approval.

Look for a TMS with a business intelligence tool that tracks loads from pickup to final delivery and analyzes load cost by lane. IMPACT TMS has an automated spot auction tool that allows the customer to obtain the lowest rate on shipments and secure capacity in a timed environment.

In these unprecedented times, the need for freight optimization is crystal clear. Enterprise shippers need to understand the role a robust TMS plays in transportation management and freight auditing to drive new levels of efficiency and reduced freight spend.



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THOUGHT LEADERS

The Three Trends Driving Supply Chain Efficacy in 2021



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Hannah Testani, chief operating officer at Intelligent Audit, has over a decade of experience helping Fortune 500 companies leverage data across all modes to ship smarter and lower costs.

Change is the one constant in supply chain management. And today, shippers need a flexible, agile, and data-driven process to control freight spend. Given the state of last year's record-breaking e-commerce growth and the uncertainty in the market today, it's essential to know how a few trends will shape the rest of 2021 and build a better supply chain strategy.

Q: *How will the supply chain evolve in terms of agility?*

A: Shippers need an advantage to thrive in 2021. While the industry continues to see the effects of prolonged demands on e-commerce, being nimble and understanding every decision's financial impact becomes a critical factor in saving time and resources. And that ability will drive more efficient and effective decision-making across the global supply chain.

Agility also goes back to the generalized differences in individual datasets. Remember that not all data is built on the same source code. When you consider the variety of supply chain systems available, including TMS, WMS, WES, YMS, ERP, freight forecasting tools, and more, it can be hard to interpret and act on data. As such, it's critical for shippers to have a common data footprint to leverage, which is where normalized data is the beginning of all data-driven processes.

Q: *With the need for increased throughput, what is the most critical factor in using data analytics to create omnichannel supply chains?*

A: 2021 will be the year where single-sourced carrier contracts fall by the wayside to

source more capacity. It's not just the capacity to move available shipments; it's the ability to look beyond the typical movements and recognize when things change.

Instead of relying solely on the standard, shippers need a broader picture to find those opportunities in real time. It boils down to a singular fact. With increased supply chain network size, shippers will need a cloud-based, centralized system to collect, normalize, and analyze data, providing a ray of hope for end-to-end transportation optimization.

Q: *What do you think about automated reporting and its use to enable better decision-making?*

A: There was a time when it was a single person's responsibility to manage freight and identify the best spend-savings' opportunities. Again, that worked well when supply chains had a set, clear, and smaller group of suppliers, carriers, and partners. With the rise of third-party marketplaces, contract manufacturers, and transportation service providers' expansion, those days are dead and gone. And an advanced solution that marries both technology and people through business intelligence reporting and automation is the only way forward.

Now, shippers are turning to automated reporting to analyze all savings opportunities presented. That empowers shippers to deliver shipments faster, cheaper, and with fewer exceptions. Technology transforms and simplifies the whole process, allowing enterprises to quantify savings with amazing accuracy and acuity effortlessly.

Outsourcing Helps Close IT Gaps and Meet Milestones

Q: *To meet new and changing shipper demands, what areas of focus should be the highest priorities for tech investment by carriers in 2021?*

A: One challenge we're witnessing right now is the increasing need for carriers to provide more real-time visibility of a shipment's journey. Carriers have begun taking steps to do just that and should continue investing in in-cab technology, API integrations, expanding EDI capabilities, or a variety of all these things.

Q: *What is the single greatest threat to carriers reaching their goals for 2021?*

A: The vulnerability to hackers who gain access to carriers' systems with Malware and Ransomware causes them to cease operations for a period of time. As companies race to keep up with advancements in technology and provide the service customers demand, they must also strengthen security measures to safeguard their business.

Q: *Legacy systems: Are carriers migrating away from them? Why or why not?*

A: Many larger carriers have been slow to move away from legacy systems. This is primarily because a solution didn't exist that was worth the amount of upheaval caused by such a migration.

Many of DDC's carriers have thousands of customers. But not all of their customers are ready or willing to take the leap to API integration. This requires balancing between those

customers who embrace innovation and those who are slow to adopt.

Q: *How can carriers overcome the IT talent gap for these older technologies?*

A: Carriers who use legacy systems, like IBM AS400, require programming from an increasingly aging workforce with skills in Report Program Generator (RPG). These skills are hard to come by as younger generations gravitate to the newer languages of Dart, Rust, TypeScript, and Python.

This poses a problem as the older RPG programmers begin to retire. If there is no plan to move away from legacy systems, it is crucial to seek out partners like DDC that can support your needs in any of these languages.

Q: *How can carriers achieve true seamless integration if not everyone in the supply chain invests at the same pace?*

A: Be practical and conquer one challenge at a time. Instead of forcing change on your entire organization, tackle integration by customer, department, or region.

It may also be worthwhile to find strategic partners like DDC who can provide IT support, whether it be for specific short-term projects or for ongoing support to overcome the integration and visibility hurdles you face.

Q: *Can carriers act as change agents for shippers to meet new market demands with IT? If so, how?*



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A: I believe so, but the shippers heavily influence the industry's pace toward advancement. Carriers need to take an inclusive approach that gives shippers the visibility they desire without alienating those who are lagging behind.

By leveraging DDC's expansive range of programming languages and skill levels, carriers can offer a consistent experience regardless of each shipper's individual IT investment.

THOUGHT LEADERS

Converging Order and Logistics Management on One Platform



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Q: *Order management systems relate closely to supply chain management by better matching demand to supply. What are the new developments in OMS?*

A: Today's technology empowers brands to offer a range of diverse, quality products, as well as customizable delivery or omni-channel fulfillment options to their customers. Doing so cost-effectively has always been a challenge. OMS tends to focus

on planning or execution, but rarely both. Next gen solutions, however, feature smart capabilities, such as multi-level order, inventory, and logistics management, that finally converge both to help companies balance supply against customer and business demands.

Brands can use one system to automate and optimize orders, inventory, and transportation across dynamic networks. So, no matter what sales channel the order comes from, businesses source from the best possible location and choose the best possible routes to take via the best possible carriers to fulfill it. Flexible systems that continuously optimize process flows in real time are becoming invaluable in consistently ensuring OTIF delivery at lowest possible costs.

Q: *What are the benefits of combining order and transportation management?*

A: The common technology strategy is to accrue as many systems as the capabilities needed. Typically, that means purchasing, an order management system, a transportation management system (TMS), and potentially some multi-modal add-ons and integration layers. A single platform for order and transportation management is a fraction of the total cost of ownership of acquiring several point solutions. Unified technology also simplifies operations and eliminates integration fees and perennial upgrade costs.

Siloed systems also can't optimize across the entire value chain. An OMS might select the "best" inventory and location to fulfill from, but without end-to-end visibility over

both order and logistics management, the data it leverages is limited and therefore suboptimal. Without proper TMS integration, the OMS will estimate costs—which is not really optimizing. A supply chain solution that supports the full order lifecycle is a gamechanger, capturing costs at every touch point and optimizing across all flows and functions.

Q: *How does having one integrated view for transport, logistics, and orders foster better collaboration between an enterprise's functional silos?*

A: Most organizations don't realize the extent to which functional silos impact operations and their bottom line. Each business unit, because it is incentivized differently, tends to narrowly focus on its own objectives without considering how those goals impact other sectors. Logistics professionals might focus on the cheapest way to transport orders, while their e-commerce counterparts may push for high product margins.

Unifying systems on a single platform not only offers insight into the bigger picture: How to optimize across silos, rather than within them. How to improve both operational excellence as well as the customer experience. With a single view across all functions, businesses are able to consider priorities other than cost, and holistically factor all requirements and constraints. That's a big deal. Integrated views empower companies to make radical improvements by redefining KPIs and reframing initiatives toward greater objectives.

New Directions in U.S.–Mexico Trade and Logistics

Q: *Why is trade with Mexico so important and where do you see the opportunities?*

A: Mexico is already the United States' second largest trading partner, with two-way trade in goods totaling over \$615 billion per year. The recent implementation of the United States-Mexico-Canada Agreement (USMCA), combined with global sourcing strategies resulting in more nearshoring of manufacturing, point to continued growth in U.S.–Mexico trade.

Mexico is also one of Port Tampa Bay's most important trading partners, ranking number one for imports and number two for exports. This covers a diverse mix of cargoes including bulk, break bulk, and containers. Among the commodities we handle and where we see opportunities for growth include fertilizer, chemicals, steel products, furniture, appliances, aggregates, cement, petroleum products, vehicles and auto parts, juice, and fruits and vegetables.

Q: *What are the main issues impacting logistics and the supply chain for U.S.–Mexico trade?*

A: As this trade continues to grow, the overland border crossings have become chokepoints, with importers and exporters increasingly frustrated with congestion and delays. However, thanks to new Gulf of Mexico services offering 3-day transit times to Port Tampa Bay, the all-water option is emerging as a much more efficient supply chain solution.

This is especially the case for trade between Mexico and Florida, but also reaching markets in the Southeast, Northeast, and the Midwest. Work Cat now offers a weekly Brownsville

Texas-Port Tampa Bay container-on-barge service using 53-foot containers, which are especially attractive for customers used to receiving deliveries by truck from Monterrey and Northern Mexico.

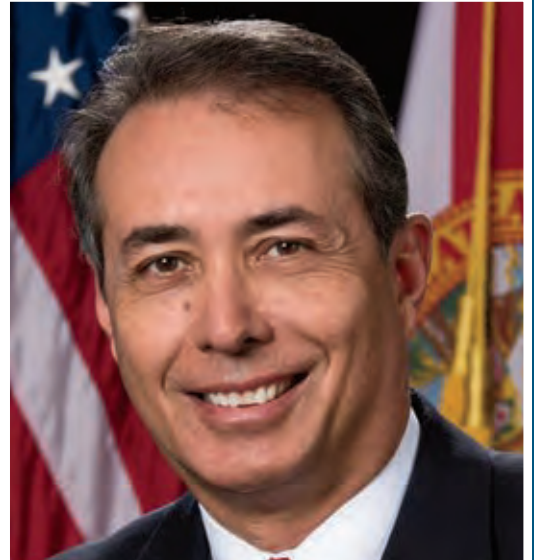
ZIM has launched a new weekly Altamira-Port Tampa Bay service, the Mexico-Tampa Shuttle, with Kuehne + Nagel as partners on this new service marketed as the Blue Marlin Express.

Q: *What is the port doing to handle this growth?*

A: Together with our terminal operator partner Ports America, we are in the middle of a major expansion to accommodate the continued strong growth of our container business, which was up by 33% over the past 12 months.

The Port recently added 25 acres of additional paved storage, bringing the total to 67 acres, with plans to add another 30 acres. Work has also begun on the addition of a third berth, which will bring the total to more than 4,500 linear feet allowing three large ships to be worked at the same time. Construction will soon begin on a new container gate and the bid process has begun to acquire two additional ship-to-shore gantry cranes.

Another key partner is Port Logistics Refrigerated Services powered by Titan Cold Storage, which runs the new 135,000 SF on-dock refrigerated warehouse, and also provides stevedoring and terminal services, including for the new Work Cat barge service. This state-of-the-art facility is key to serving Florida's grocery/food and beverage sector, which is concentrated along the Tampa Bay/Orlando I-4 Corridor—Florida's Distribution Hub and important for the perishable trade with Mexico.



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THOUGHT LEADERS

E-Commerce Trends Drive Automation Initiatives



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Q: *Do you think the adoption of automated systems will increase with the accelerated e-commerce penetration rate?*

A: Based on what we have seen in the past several months, the answer is a resounding yes. Someone a long time ago said, “necessity is the mother of invention.” I recently had a 3PL prospect, who is now fast-tracking automation for a new apparel module, tell me, “We’ve been talking about this for years, it’s time to do something.”

Where our company and our solutions come into this picture is offering what I call “point automation.” As operations grow, managers typically do not have the resources to automate their entire operation. We look at the choke points; for example, getting merchandise off the docks, both coming into and out of the warehouse, as well as actually retrofitting racks with technology to assist picking and putting.

Q: *What e-commerce developments support the increasing use of automation in supply chain operations?*

A: The biggest trend, of course, is the sheer volume increase in e-commerce business. You can look at the growth of the sector in a couple of ways. One is the amount of total retail that e-commerce encompasses, what we call the “e-commerce penetration rate.” The second look is the actual percentage growth of the e-commerce sector itself, which is driven by the first metric.

Back in 2009, around the time e-commerce retail really began to take off, e-commerce penetration of

the retail sector was just over 5%. By the start of 2020, it had climbed to an astounding 16%.

E-commerce fulfillment operations were scrambling to keep up with demand. Which meant more space, more people, more of everything. Except that finding more people got more and more difficult with the economy at full employment for several years, as did finding more space as capacity tightened.

Then the pandemic hit. Over an eight week period (March–April 2020), e-commerce penetration spiked to 27%. All of a sudden, that mad rush for staff during peak became a yearlong endeavor. For the most part, anyone in the e-commerce fulfillment sector was operating at “peak” all year. Until the 2020 peak season when overall peak volumes were well over double the previous year.

Q: *What are the biggest advantages of automating fulfillment operations?*

A: When operations are small and find themselves growing, adding more of everything typically gets the job done. At some point, however, something’s got to give. When an operation doubles in size, the complexity of managing that operation more than doubles. Complexity grows exponentially with volume. The model of doing-more-of-the-same eventually breaks down.

That’s where automation comes in. It’s a tool set to make your employees more productive and more effective. Instead of bringing on more people, you increase the value of the people you have. Done right, it also increases their morale.

Managing Transitions Effectively to Enhance Project Success

Q: *Why is transition management so critical?*

A: The effectiveness of the transition depends on how well the change is managed. It is essential to have a documented project plan and a dedicated project manager with experience across multiple disciplines.

Their job is to manage the process, hold the team accountable, and develop a formalized communication process ensuring transparency on governance, timelines, data, deliverables, status, dependencies, disruptor/risk identification, and mitigation plans. Effective project management drives collaboration, support, and stakeholder engagement, significantly enhancing project success.

Q: *What are the most significant benefits of effective project management?*

A: It allows you to manage successfully and efficiently. Setting the scope, deliverables, defining stakeholders, timelines, resources, project governance checkpoints, risks, and budget facilitates the most effective use of time and resources.

A structured plan improves collaboration as roles and responsibilities are clearly defined. It also improves customer satisfaction. Customers' expectations must be clearly understood and defined within the project plan to ensure validation and alignment.

Additionally, it mitigates against scope creep. Every project faces risks at some point during the process. Maintaining regular communication updates with stakeholders and clients provides transparency to identify and

address. Simply stated—effective project management ensures no surprises.

Q: *What are the initial steps in managing a network change or software integration?*

A: You need to create a change management plan that clearly outlines the activities and roles that need to be managed. This is a fluid document that explores how the change will impact people, processes, and systems that support the business unit.

The plan needs to identify key stakeholders, document current day-to-day business processes that need to be addressed, training needs of staff, site performance reporting, required IT infrastructure changes, interface needs for other business systems, timelines, efficiencies/inefficiencies, and risks along with “go-live” support.

Q: *What are the challenges in maintaining a fluid project plan?*

A: Projects rarely are executed without disruptions that need to be identified and addressed through plan modifications. While it's the project manager's role to identify risks, they need the support of the entire team to be effective.

Having people who understand the plan and can execute is the biggest challenge. All stakeholders/clients need to be involved in the planning process and encouraged to be vigilant on potential risks. This engagement, combined with frequent project communication processes and status checks, allows risk identification to be more comprehensive and transparent.



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Accelerating Innovation to Meet Supply Chain Challenges



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Innovation is a cornerstone and driving principle at ID Logistics. These three winning projects exemplify our mission to continually drive process improvements and boost service levels.

Supply chain innovation is more imperative than ever, as companies contend with uncertainty and try to maintain business continuity in the face of disruption.

Enterprises that have optimized operations to scale to demand and streamlined processes to maximize efficiency are best positioned to meet today's quickly evolving supply chain challenges.

At ID Logistics, innovation is a cornerstone and driving principle. In order to support companies' efforts to stay responsive to demand and meet logistics challenges cost-effectively, we foster a culture of innovation and creative problem-solving.

Focusing on innovation and operational excellence, and with an expertise on highly technical and mechanized / automated solutions, we have expanded into 17 countries since our founding in 2001. As we enter the North American market, we are putting the same philosophies into practice.

To support and accelerate innovation, we launched the Innovation Booster program, an annual competition that highlights our focus on innovation management. This operations-focused program gives every facility manager the chance to influence how we work by developing or replicating innovative projects in their own site.

The 2020 competition has highlighted the ingenuity across our global operations, with all our Group's subsidiaries getting involved. After a period of on-site testing, every country picked its own national champion. Ten finalists were selected from 117 innovative projects. A web portal showcasing all projects that made it into the final round was made available to 700 employees, allowing them to find out more about these national champions and vote for the Innovation 2020 winner.

ID Logistics is proud to announce the top three innovations of 2020:

ID Smart

The ID Smart project leverages put-to-light technology mounted on an order picker to increase the efficiency and quality of the order preparation process. Through the use of a high-resolution camera and voice picking technology, this system significantly increases the productivity of picking and can also be used to record and analyze the order preparation process in order to better train new employees.

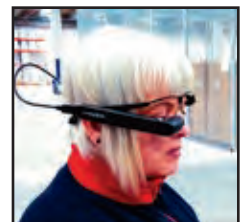


Pick Trolley 2.0

A large electronics manufacturer implemented the pick trolley 2.0, which combines put-to-light and pick-to-graphics technology to address the site's changing outbound profile. With the warehouse originally optimized for pull pallet picking, the team was able to satisfy a new requirement of carton and piece picking, without having to make major adjustments to the layout. This innovation also improved the efficiencies of the picking process and improved their overall quality through the reduction of picking errors.

Smart Glasses

This innovation was conceived by the ID Logistics team as a result of a retailer's request to improve the quality and accuracy of direct-to-consumer orders packed for customer pickup at their stores. By displaying the picking data on the glasses, operators are able to complete splitting or picking operations in a more flexible way. They can also scan products and location barcodes by simply looking at them and receive voice-based confirmations, thus greatly reducing the amount of training time for new operators. This innovation not only led to reducing overall onboarding cost for new employees, but also increased the overall productivity and sorting capacity for ship-to-store-deliveries.



Aptitive Helps 3PL Derive Insights from Data with Real-Time Analytics Platform

BENEFITS OF A DATA ANALYTICS PLATFORM

INCREASES SPEED

Helps you analyze, predict, and improve metrics such as least-to-book time, inbound receiving time, and on-time performance

IMPROVES SERVICE

Helps you increase speed, accuracy, quality, and service

REDUCES COSTS

Uncovers cost saving opportunities in your supply chain, operations, or transportation

MANAGES INVENTORY

Gives you the answers you need about inventory availability, when you need them

IMPROVES PERFORMANCE

Monitors warehouse and fleet assets to stop issues before they happen

FORECASTS AND BUDGETS

Improves quotes, anticipates future needs, optimally allocates resources, and more

INCREASES EFFICIENCY

Reduces overhead and increases revenue. Measures and optimizes carrier matching, out-of-network shipping, routes, trailer utilization, and more.

CUSTOMER REPORTS

Helps your customers help themselves by providing high-quality customer dashboards and reports. Embedded logistics reporting solutions take the burden off your team and give customers the data they need.

For 3PLs the need to easily access and analyze data is essential for making operational decisions, providing accurate (and profitable) quotes, and providing the reports their customers demand. The reality for most 3PLs is that data is often scattered in hundreds of systems throughout their organization. The result is a lack of visibility, poor quality analytics, and reports that are out of date by the time the executive team gets them.

This was the case for a Chicago-based 3PL provider. As a result of aggressive growth and acquisitions throughout the years, they had a large amount of data on their hands but struggled to get the insights they needed. The data-driven leadership knew this data held the promise of cost-saving operational improvements, more profitable quotes, and improved service, but they needed a partner to help them get there.

After meeting our data and analytics team and learning more about our experience in the space, they chose to partner with Aptitive to design and implement a scalable data and analytics modernization strategy.

Our Approach

The first step was to meet with technical and business leadership to understand their current technical infrastructure and how data would be used from a business perspective. Our team then created a strategy to build a centralized, real-time data analytics platform. This solution would:

- Integrate systems and applications throughout the organization to provide a centralized access point for the data
- Standardize the data with consistent terms to enable easier data analysis
- Provide real-time, user friendly Tableau dashboards to help business users easily analyze the data they need when they need it
- Lay the foundation for future growth and advanced analytics for more complex data

Throughout each phase of the program, we worked with technical and business stakeholders to ensure the solution would align with the needs of the organization including several functional areas such as IT, Operations, Finance, and Sales.

Once the data was centralized, we were able to focus on building real-time dashboards that have helped company leadership effectively identify and rally team efforts around areas of improvement and potential growth.

A Chicago-based 3PL turned to Aptitive to design a scalable data and analytics modernization platform. Aptitive delivered a solution that not only helped the provider, but their customers as well.

The Result

This success has not only helped our client, but is now also helping their customers. Based on the success and enthusiasm for their new data analytics platform, they began offering self-service business reporting services to their clients. The platform enabled more effective customer engagement, and also allowed them to monetize their data by offering analytics as a service.

If you're struggling to drive the insights you need from your data, Aptitive can help! To learn how, visit aptitive.com/supply-chain-and-logistics/ to read more about our services, see case studies, and learn about our modern data platform quickstart.



[INSIGHT]

REVERSE LOGISTICS

by Ken Bays

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Achieving a Sustainable Returns Program

A good returns management program is a sustainability effort in itself. The right approach can improve value recovery, increase efficiency, and lower transport and labor costs, all while reducing your carbon footprint, food and landfill waste, and fossil fuel consumption.

The answer to sustainability could be right under your nose, residing in business process improvements available in your internal processes and infrastructure.

Among supply chain leaders, 70% are planning to invest in the circular economy in the next 18 months, and 66% are either currently using or planning to use digital technologies to improve reverse logistics in the next two years, finds a February 2020 Gartner report.

They're right. Take the example of retail returns management. A good reverse logistics program can improve costs and meet measurable sustainability successes in the following areas:

- **Transportation.** Strategically locating returns-processing facilities can greatly reduce your transport spend. If you use an external returns processor, choose one with facilities located near your distribution centers to reduce road miles. Some national retailers have only two or three returns facilities in the entire country, which is mind-blowing considering the miles spent moving less-valuable product. There are opportunities to reduce those miles and cut your carbon footprint.

- **Returns disposition software.** Five basic things can happen to returns:

1. Return to stock.
2. Return to vendor.
3. Liquidate.
4. Donate.
5. Recycle/destroy.

Too many retailers throw away money by trashing products that can either be returned to stock for full retail price or returned to vendors for credit. Having a tool designed specifically to manage and optimize returns disposition is critical to both recovering value and reducing the volume of product going to landfills.

The right returns management software helps maximize value recovery, boosts net sales with more return-to-stock, and enables recycling and donation programs.

- **Liquidation.** While no one wants to let product go for a fraction of its retail value, it's better than destruction, which is all cost and environmentally unfriendly. Liquidation keeps viable product in commerce and out of landfills.

While brand protection often has to be considered in liquidation, it's an opportunity to offer a higher-value

product at a lower price point, introducing a new shopper segment to a brand. If you have food products in your reverse stream, liquidation and donation reduce food waste and help feed people.

MEASURING SUCCESS

A solid returns management program can easily show both business and sustainability benefits. Reverse logistics is a needed data opportunity to help find understanding and knowledge about a product's full life cycle.

Returns data is valuable in better informing other aspects of your business, such as merchandising decisions; product quality; shopper preferences; product, store, and vendor performance; and tying more KPIs directly to the bottom line.

As for reportable sustainability measures, it's easy to capture data showing the volume of product kept out of landfills, packaging and products recycled, items donated, component parts upcycled or sent back to parts bins, and tons of other tangible measures.

When destruction is the only option, use an energy-from-waste partner who generates electricity. You can report the kilowatt hours or fossil-fuel equivalency generated from the product destroyed.

Sustainability offers opportunities that are better for your business, especially when improving your returns program is a sustainability program in itself. ■



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[INSIGHT]

LEANSUPPLYCHAIN

by Paul A. Myerson

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Professional Education: Time to Pay It Forward

The pandemic, for better and for worse, has shined a bright light on the supply chain and logistics functions.

Early on, we saw the bullwhip effect impact personal protective equipment and even toilet paper as a result of hoarding and misallocation. Now that a vaccine is in production and early distribution, we keep hearing about logistical challenges rising from its complicated cold chain requirements.

All of this has shown the importance of visibility and collaboration in the supply chain, as well as how important it is to our economy today and in the future.

As a result, demand for supply chain talent is at an all-time high, as companies now realize how important supply chain management (SCM) is to their success. While more people are earning SCM degrees and certifications each year, it hasn't been enough to fill current needs. That means businesses worldwide may find it difficult to meet demand for their products and services.

Even in the United States, which has many educational institutions and industry associations offering degrees and certifications, companies

are still having trouble filling senior-level SCM positions. It's also hard to fill lower-level jobs, such as truck drivers, and find qualified warehouse workers. All of these challenges drive up labor costs.

WHY A TALENT SHORTAGE?

The potential causes of this looming supply chain talent shortage vary and include:

Demographics. As baby boomers retire, many companies find they don't have a big enough pool of experienced managers to replace them. There especially seems to be a lack of middle managers with the proper skills.

Globalization. Doing business around the world has led to continuous outsourcing and a move to manufacture in multiple countries. As a result, the supply chain labor needs to increase faster than workers are becoming qualified.

Changing and expanding skill sets. As there is a significant use of data analytics, artificial intelligence, and robotics in the supply chain field, there is now a requirement

for more technical and analytical skills. The skill sets required are also expanding.

For example, if you are in procurement, you also have to help manage corporate social responsibility and understand political issues such as trade, taxation, and customs.

Cost-cutting measures. To cut costs, companies have reduced headcount and cut back their training and development programs.

Lack of training programs. While there may be plenty of (fairly expensive) options in developed countries—while still not managing to keep up with demand—many emerging nations don't have nearly enough access to these types of resources.

I see all of this as a call to action to help educate and increase the human supply chain pipeline. Therefore, I plan to do my part to help expand the education of our professional workforce by offering a live, online Supply Chain and Logistics Management Certificate Program (supplychainsmarts.com) starting September 2021.

The way I see it, it's time for the baby boomers to pay it forward. ■

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[INSIGHT]

SMARTMOVES

by *Brian Kennedy*

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Crafting a Notable Job Title

A job title is more than just the name of the job you do. It is a badge, a ranking, a symbol of your worth within the particular company you work for. As the growth of the supply chain and logistics sector increases year after year, so does the competition for a notable supply chain job title.

Job titles have the power to set a professional apart and gain respect from their peers. It is the first judgment you perceive of someone before even meeting them.

The growth of online presence and sharing your current position on LinkedIn inevitably makes a person want to have a job title that stands out. Who wouldn't? A good first impression and sense of respect is something everyone strives to achieve. And normally those attributes come along with a striking job title.

As the demand for top supply chain, logistics, and manufacturing talent increases in the coming years, it will become more important for companies to focus on optimizing their career marketing efforts. Investing time in creating standout job titles that compel the right candidates to apply is a great place to start.

Here is why it is so important to craft notable supply chain job titles:

- **Create a job title that supply chain professionals actually want.** Instead of using generic or vague job titles, use your

creativity and try to make the job title stand out the best you can.

Nobody wants a super basic job title that hundreds of thousands of other professionals have in the world. It makes an employee feel less valued and easily replaceable if tons of others share their exact job title.

Sometimes all you need to do is integrate functional or departmental context into the job title. Get a little creative.

For example, if a large manufacturing facility needs a logistics analyst on the distribution engineering team, try using “logistics analyst—distribution engineering” instead of the vague “logistics analyst” as the title. It is more eye-catching and could result in more people willing to submit applications to apply for the job.

- **Allow for leadership opportunities.** A common thing our logistics recruiters see is someone working at a distribution plant in a role where their job title is “internal logistics assistant.” The word in this job title that stands out is “assistant.”

A common reaction to the word “assistant” from the outside looking in is that this individual is not in a leadership position and directly works below the person they are the assistant to. This can easily turn away potential candidates who are seeking leadership opportunities within a company.

With that in mind, what if we simply changed the last part of this job title from “assistant” to “coordinator”? Then the job title would be changed to “internal logistics coordinator.”

Same job, but sounds and looks a whole lot better, right?

- **Attract supply chain talent.**

Hopefully, after reading this far, you know that job titles have the incredible ability to attract top talent within the supply chain, manufacturing, and logistics sectors.

A company that is full of interesting-looking and creative manufacturing job titles will capture the eye of a job seeker who has just gotten tired of looking through their 20th job opening for a typical “warehouse manager.”

There are more supply chain jobs readily available in the economy than there are people to fill them. A great way to take the next step in attracting supply chain talent and filling an open position lies with crafting a notable supply chain job title.

A job title is essentially a name tag; make it worth wearing. ■

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[INSIGHT]

VIEWPOINT

by Charles Sauer

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Rail Price Controls? Ridicule the Thought

In 1980, CNN, fax machines, and camcorders made their debut, and for the first time since 1887, the rail industry was deregulated. Today CNN has many competitors, fax machines have been surpassed and their technology incorporated into other products, and camcorders are not only cheaper, almost all of us carry a better quality one in our pockets. Also, rail rates are 44% lower, and the market is flourishing.

That is what happens in competitive markets: Competition drives down prices, while service usually increases. However, things that happened 40 years ago are hard to remember today. When it comes to public policy, that is a problem.

Almost nobody who currently works in rail policy has the institutional knowledge of what the rail industry was like before it was freed from government constraints. Now that things are good and shipping is cheap, bureaucrats are considering what should be unthinkable: restoring price controls.

In 1887, Congress passed the Interstate Commerce Act. The intent was to break the railroads' monopoly power. This never works, but Congress loves trying.

Fast forward 100 years, and regulations and price controls almost bankrupted the rail industry. So, in 1980, Congress passed the Staggers Rail Act, which allowed for deregulation and for shippers to compete. Freight rates fell by 45%.

Now, America's freight railroads are all in much stronger financial

positions and offer the most competitive shipping rates in the world. Yet, the Surface Transportation Board (STB) is considering a revenue ceiling.

Price controls in any form stunt innovation and investment, and they provide perverse incentives that disrupt and cause inefficiencies that hurt everyone.

If the government is intent on looking into regulating the rail industry, officials can at least update their methodology. Kevin Murphy and Mark Zmijewski, economic professors at the University of Chicago, recently released a paper outlining an updated methodology to modernize how the STB monitors the freight rail industry's financial health.

Their methodology compares the financial performance of the railroads to the financial performance of companies operating in competitive (unregulated) markets for purposes of assessing revenue adequacy. They argue persuasively that railroads are an integral part of the economy and that redefining how

the industry is measured would stem constant efforts to increase utility-style regulation of the sector.

This is important because increased regulations and price controls make rail less attractive to investors. U.S. freight railroads, which are almost entirely privately owned, invest an average of \$25 billion annually to maintain and modernize the network. And, with freight demand expected to rise by 35% in the United States by 2040, they will need every dollar of those investments.

But, if price controls are implemented, and if investors can get higher returns by investing in other industries, it doesn't take a financial wizard to figure out where the investments will go.

If investors can make more money by investing in social media apps, then that is where they will invest. At the same time, the lack of investment would put a stranglehold on the rail industry. That doesn't benefit anyone in the long run.

During the past 40 years, society, knowledge, and technology have progressed, but the government is contemplating going backward.

We should ridicule this thought. The government needs to find ways to make the rail industry more competitive. If we can ship goods faster and cheaper, stores can sell more, rail can make more money, and consumers can get more for less.

Let's not look back to 1887 in 2021. ■

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[INSIGHT]

IT MATTERS

by Jon Chorley

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Building Coherent Enterprise Architecture

During the past few years, in order to stay competitive, many companies turned to so-called “control towers” and shiny new objects like artificial intelligence, Internet of Things, and blockchain as the answer to modernization and competitive edge.

Many companies, however, failed to address the elephant in the room: the on-premise, decades-old, disconnected systems they used for core supply chain operations. The result? Despite attempts to modernize, they failed to achieve the desired result. COVID-19 shines a bright spotlight on these issues: Visibility without control. Capability without connectivity. Insight without response.

Emerging technologies do have tremendous potential in supply chain. But technology for technology's sake almost always ends in disappointment.

So, how can companies set their supply chains up for long-term success in a way that allows them to effectively leverage emerging technologies and succeed in the new normal? Put another way, how can they combine innovation with a coherent enterprise architecture?

Consider the long-term goals for your supply chain. Think about what you want your business to look like in a strategic time frame, say five years. Do you want to increase revenue? Expedite the path from purchase to delivery? Enter new markets?

Bring in stakeholders from across the organization to align on a few

attainable, honest goals. Based on those conversations, determine what your supply chain must be capable of to make those goals a reality and evaluate your current supply chain solutions against those goals—not as piecemeal capabilities, but as a holistic solution in the context of an enterprise architecture.

Define the IT investments required to enable those goals. If 2020 has taught us anything, it's that companies must be able to pivot entire supply chains and businesses at a moment's notice.

An outdated, on-premise technology foundation doesn't enable you to do that, no matter how many layers of new point solutions are added. At an enterprise level, that means cloud architecture that delivers true software as a service (SaaS).

SUCCESS RELIES ON SaaS

To be successful, invest in SaaS-based supply chain, logistics, and manufacturing solutions that integrate seamlessly to enable flexibility as conditions change and deliver the continuous innovation required to stay competitive.

Only once you've defined that cloud-based technology foundation should

you fit emerging technologies into the picture. Emerging technologies can play a critical role in helping to achieve long-term company goals when adopted with purpose and integrated seamlessly into core systems.

That's why it's important to select a cloud vendor that embeds emerging technology capabilities directly into their core solutions, rather than offering a-la-carte modules that users have to deploy and integrate themselves.

This doesn't mean you're required to use all (or any) of the embedded emerging technologies if they don't serve your company's purpose. But it does mean that you can easily switch these capabilities on or off without having to deal with the headache of building, integrating, or maintaining anything.

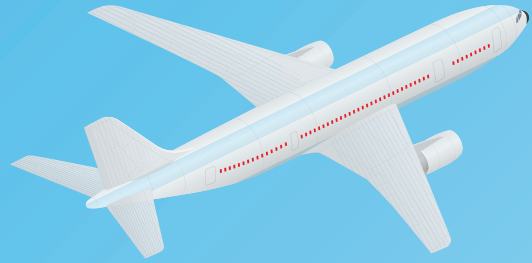
COVID-19 has proven that supply chain professionals have a unique opportunity to drive substantial change. Supply chains are now a boardroom conversation; heck, they're even a dinner table conversation. But even the best of intentions won't end well if your supply chain continues to rely on a foundation of antiquated systems, augmented with poorly integrated emerging technology buys.

As we emerge from this pandemic, think strategically about where you want your company to be. Structuring your supply chain with a strong enterprise architecture will support your goals. ■

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[INSIGHT]

LOGISTICS MGMT

by Glenn P. Clinger III

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5 Steps to Process Improvement

I was involved in logistics and transportation for more than 25 years and spent the last 16 of those years with a large apparel corporation's private fleet. During that time, I cannot remember a single year when the private fleet did not have to defend its existence. Each year the argument seemed to escalate until the cost reductions started.

I had been studying Six Sigma for several years and had quietly earned my certification. At that time, the corporate answer to cutting costs fell to cutting head count, but I have always felt that cutting headcount may impact the customer experience.

In my mind, saving money meant saving my co-workers' jobs. I could see my supervisor struggling with the prospect of cutting jobs, so I voluntarily became involved to save the fleet by using process improvement.

A LIGHT IN THE DARK

The world is changing, and process improvement has become more important than ever. As many companies close their doors and others struggle to stay afloat, it has become imperative to find ways to save money. Attaining greater efficiency may shine some light on a seemingly dark business operating environment.

It can be an overwhelming feeling of helplessness as you watch your department or company fail. Many transportation professionals share this

feeling, especially now. For many business owners, the situation has turned from operating to merely surviving, and everyone is scrambling for solutions.

The key is reducing variation for a more consistent process. Our small department did not have the assets to spend on trained process improvement people, but we did have a handful of employees with many years of industry experience, and it was up to us to fight to keep our department going.

As demands from corporate to cut costs escalated, I looked at improvement using a five-step process:

1. Look for opportunities that may achieve the desired savings results.
2. Gather the necessary data to confirm the savings potential.
3. Establish a timeline to implement the project and fill key roles.
4. Implement the improvements.
5. Set up a program to constantly monitor and improve on the idea.

Vince Lombardi said, "Perfection is not attainable, but if we chase perfection, we can catch excellence." It is not about

mastering a complex methodology, but rather about taking the simplest aspects of basic business process improvement and combining it with today's high-powered products.

By doing this, any business, large or small, can benefit from process improvement. It is imperative that you be a creative thinker. Force yourself to look at problems from every angle and play the childhood game of "what does not belong?" as it relates to your operations. Then eliminate or reduce those items.

CONTINUOUSLY EVALUATE PROGRESS

When you improve a process, you must continually improve and monitor it to make sure that it meets or exceeds the analyzed outcome. Allowing people in our organization to see that the projects were having an impact on operational savings was at the heart of our success.

You must know where you are and where you want to go, and then find a way to get there. If you understand your business and use creativity, you will always find ways to improve supply chain processes and save money.

During these difficult times, we can all benefit from becoming students of process improvement systems. Too many people give up and say it cannot be done. But as my father used to say, "When someone says something can't be done, there is already somebody out there doing it." ■



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ECODEV

by *Mary Lamie*

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How the National Freight Strategic Plan Can Benefit Shippers

The U.S. Department of Transportation (USDOT) recently announced the first-ever National Freight Strategic Plan (NFSP), a historic initiative that will benefit shippers and others buying transportation and logistics solutions by delivering more affordable, efficient, and reliable options to move cargo.

Amidst continued growth in freight demand, the new plan lays out a vision for long-term investments in infrastructure, the workforce, and other essential parts of the freight system aimed at strengthening the nation's competitiveness.

Every day, shippers move more than 51 million tons of freight and energy products valued at nearly \$52 billion via America's transportation network. The freight network in the St. Louis, Missouri, region carries 210 million tons of inbound and outbound freight annually with a value of \$6 billion.

We have been working diligently to enhance the freight network in the greater St. Louis region to accommodate anticipated growth and ensure shippers have options when moving cargo into and out of this pivotal hub. We are excited to see this plan for improving the safety, security, and resilience of the national freight system that the St. Louis region is an integral part of.

The plan's guiding principles of action for federal involvement in freight policy touch on familiar themes, including improving cross-sector, multi-jurisdictional, and multimodal collaboration and providing targeted federal resources and financial assistance to support freight projects that provide significant benefits to the national economy—and to shippers.

UNITING TOWARD A COMMON FOCUS

We are following these same principles through uniting the bi-state region toward a common focus by establishing partnerships that bridge government boundaries, the public and private sector, industries, and transportation modes.

In the past 24 months, nearly \$1 billion has been invested in the region's freight network. Many of the projects funded have been identified in the St. Louis Regional Freightway's Priority Projects List, representing key

infrastructure needs of manufacturing and logistics industries in the region. The annual list is a valuable tool to align and amplify advocacy for support and funding for critical infrastructure improvements, and currently includes 21 projects representing a \$2.2 billion total investment. Half that amount covers projects already under construction or funded and expected to start soon.

These include the \$222 million project to replace the Merchants Bridge over the Mississippi River, one of America's primary east-west rail corridors serving the third-largest rail hub in the country. The public-private partnership delivering this multimodal rail project is an example of success when you follow the USDOT NFSP.

We also continue to develop partnerships to establish new transportation links with coastal ports to facilitate cargo movement between America's Heartland and overseas destinations via the inland waterway system with containerized cargo.

With USDOT support, we see bi-state regions like the greater St. Louis area helping manufacturers, distributors, and retailers to compete by ensuring they have adequate infrastructure to move freight safely and efficiently. ■



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[INSIGHT]

E-COMMERCE

by *Steve Cernak*

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Revisiting Brand Management Policies

The recent health crisis has increased online sales and expanded the kinds of products shipped to consumers. As consumers, shippers, and retailers get more comfortable with online commerce, the trend away from brick-and-mortar sales will likely continue, even after the health crisis eases.

But the jump in online sales has also helped manufacturers better understand how to protect their brand's reputation in this new distribution environment. As they adjust their brand management policies, they will expect all companies in their distribution chain to play a role.

ADJUSTING BRAND MANAGEMENT

Successful manufacturers have long recognized the need to ensure the way their products are transported, displayed, priced, and sold is consistent with their desired brand image. They select the right number of retailers in the right locations and then pick the right logistics companies to deliver at the right time.

They also implement brand management policies to make sure customers see the product and its price in the right way. There are legal limits to the restrictions that manufacturers can place on their distribution chain's handling and promotion of its products. For instance, restrictions on retail prices can be especially dangerous. Still, manufacturers enjoy plenty of freedom here.

Now, manufacturers are revisiting those policies to cover new concerns revealed during the crisis-induced increase in online sales. Here are four steps they will consider taking:

1. Prevent prices that are "too high."

From toilet paper to hand sanitizer, some retailers jacked up prices of goods suddenly in high demand. Consumers might not understand that the retailer, not the manufacturer, did the "price gouging," and ding the manufacturer's reputation. Manufacturers often worry about the retail price of their products. Antitrust law limits the retail price restrictions manufacturers can impose; however, maximum resale prices are much less dangerous, as they protect consumers as well as brands. Expect to see more caps on prices to help consumers get the expected buying experience, even in a crisis.

2. Change the use of brand elements.

Will the manufacturer allow the use of its name, logo, and other elements on the retailer's website, the shipper's trucks, and signs in the physical store? Will it require the use of its brand elements on boxes that

might now be the main way its products reach consumers? If so, how will that affect picking, packing, and shipping costs? As the delivery truck and the cardboard box become the new "shelf" on which the product is displayed, manufacturers will ensure they display the right brand image.

3. Stop different "bad" advertising.

Good brand management policies have always given manufacturers the ability to stop their brands from being associated with late-night TV hucksters and inflatable gorillas on store roofs. Now, they will need to cover retailer pop-up ads and incorrect product descriptions on retailer websites.

4. Ensure the right retailer is selling from the right location. Manufacturers require retailers to sell from a specific physical store with plenty of inventory—and prevent bulk sales to subretailers who resell the goods out of some big-city alley. Now, manufacturers will want to approve their retailers' web outlets. Some may even ensure their products do not end up on an auction or third-party website.

The recent health crisis accelerated the trend of consumers buying more and different products online. Manufacturers concerned about their brand reputations will impose new, or adjust current, brand management policies to account for the new reality. Every company in the distribution chain should anticipate these changes. ■



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SCSECURITY

by John Thielens

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How Ransomware Kidnaps Supply Chains

The volume and sophistication of cyberattacks has increased in recent years, but even more so now with COVID-19 and the switch to remote work for many companies. Most notably, there has been a particularly concerning rise in ransomware attacks.

Cybersecurity issues introduce a new threat to the supply chain by potentially taking a single supplier offline for days or even weeks, with massive implications for the overall customer experience.

With networks often relying on only one or two key suppliers at a time, if those suppliers are hit with a ransomware attack, the effects could be felt almost immediately at the consumer level when the order-to-fulfillment process ultimately fails to meet expectations.

Having an intimate understanding of the flow of goods through the supply chain, as well as the exchange of information between suppliers and partners, is key to quickly shifting operations and suppliers as needed.

Organizations must make several critical upgrades to their business processes and IT infrastructure to remain agile and continue to meet customer demand, despite unpredictable security disruptions. Those upgrades include:

- **Expedite new customer and partner onboarding processes.** In a dynamically changing environment, time is of the essence. Being able to respond rapidly

to changes in the business ecosystem and set up new partners, customers, and suppliers quickly is essential to maintaining business relationships and even capitalizing on disruption.

- **Eliminate unsecured, nonintegrated data practices.** Reliance on legacy manual processes can significantly limit agility. As well as being error-prone, such processes can be stretched to a breaking point during supply chain disruption. A flexible integration framework can eliminate these risks.

- **Automate integration with enterprise resource planning (ERP).** For most organizations, ERP is the core of the business, with tentacles that extend to partner, supplier, and customer interactions as well as to other internal systems.

Wherever possible, automating business processes by integrating ERP applications with other systems provides a solid backbone for the business, yielding resilience to respond to disruptions.

- **Move electronic data interchange (EDI) service to a stable platform.** More than just stable, EDI needs to be robust

and flexible. A potentially volatile and rapidly shifting supply chain means that organizations must be able to react swiftly. And that means being able to quickly integrate with new trading partners and modify existing supply chain relationships.

- **Lay the groundwork for future application integration and application programming interface (API) development to open the business to software-as-a-service (SaaS) technology.**

While EDI is still the core of many ecosystem interactions in the supply chain, more and more modern processes and SaaS platforms use APIs for integration.

Being ahead of the game with API and application integration tooling allows organizations to take advantage of new opportunities quickly, rapidly adopt value-added services as they appear, and not be limited by technology.

- **Consolidate vendors to reduce overlaps and encourage economies of scale.** Many supply chain-dependent organizations still hold systems together with string and duct tape. Taking a consolidated view, and choosing tooling that can provide an integrated platform, can not only improve resilience, but also reduce the operational costs of maintaining multiple skill sets within the organization.

By addressing these opportunities, organizations can ensure that their supply chains are built to survive and thrive in today's highly uncertain environment. ■

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[INSIGHT]

COVIDRECOVERY

by *Sean Harapko*

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Disruption Reinvents the Supply Chain

As COVID-19 has changed our world, there has been a dramatic shift in how supply chains are viewed within an organization. Today, the supply chain is increasingly recognized as an area where companies have the most to gain or lose.

Prior to COVID-19, supply chains were too focused on lean and over-optimized for cost. And in many cases, supply chains have not had the investments to quickly adapt and thrive in a world where historical demand is no longer a good predictor for future demand, and where supply constraints and risk will impede customer satisfaction and revenue growth.

Companies that purposefully adopted process change and implemented advanced technologies are faring better in the short term and will be better positioned in the pandemic's aftermath.

Leading practices in technology and process have made a significant difference in demand and supply planning. Companies that have integrated advanced analytics, machine learning, and artificial intelligence into well-defined and aligned business planning processes have pivoted from historical data, and used these models to make near-real-time production and logistics scheduling updates.

These companies often leverage external data, such as weather forecasts,

consumer sentiment, and even traffic and port data, to predict demand forecast and supply constraints. The results have been significant. Demand forecasts are 25% more accurate, tying up less working capital in inventory and safety stock, and increasing revenue capture where there is heightened demand.

This is one example where technology is catching up with our aspirations, and the vision of moving to an autonomous supply chain is within reach. The acceleration of change and the opportunities it will provide are exciting. But there is a catch: Creating a sustainable and differentiated impact can be cost-prohibitive if not done correctly.

WHAT NOW?

So, what should companies do now? It would be short-sighted to discuss using innovation to jump the S-curve without looking at similar events that have influenced the way we do business.

The oil crisis of the 1970s offers insight into the supply chain-centric business. Long lines at the gas station were common, and there was a shift

from big muscle cars to smaller cars, and even smaller engines from foreign automakers, in an industry that large U.S. automakers had dominated.

The crisis changed the game and fostered a rise in innovation fueled by a significant change in consumer demand. Japanese automakers, enabled by lean, total quality management and kanban, captured significant market share. They took advantage of disruption and jumped the S-curve.

Who would have predicted that because of COVID-19, auto manufacturers would make ventilators, breweries would make hand sanitizer, and ordering groceries online would be so popular? But looking back, these changes were inevitable. Businesses have increasingly shifted to e-commerce over the years, direct-to-consumer business models have started to pop up, and the rapid adoption of digital technologies offered companies the capabilities to innovate rapidly. Because of the pandemic, it appears we have fast-forwarded about five years—and many changes are here to stay.

For organizations to move beyond stagnant growth, executives need to fundamentally reinvent their supply chains while taking a methodical and agile approach to become more resilient.

There are five important steps for reinventing the supply chain to meet current and future customer demands:

1. Supply chain intelligence and visibility. Baseline and understand where your company is on your supply chain journey. Include the analysis of quantitative and qualitative data sets that will set the tone for your strategy as well as a financial business case.

A holistic supply chain analysis will likely show target areas for improvement, including cost-reduction opportunities, more product availability, and greater visibility.

2. Aligning company purpose with your strategic supply chain architecture. Supply chain leaders have an opportunity to step back, pause, and ask: “What’s my organization’s purpose and business model, and how does our supply chain align?”

For example, if your company is a distributor, your purpose may be to keep costs low. Therefore, cost will have a large influence on your supply chain goals. If your company hopes to provide custom experiences to your end users, quality is likely one of your main drivers.

Once you understand your organization’s purpose, you can start answering questions that will drive next steps in your supply chain architecture. You might think about how consumer behaviors have changed and how these trends will affect your operating model and network strategy.

For example, companies are accelerating e-commerce and shedding brick and mortar. Does this affect you? Two-day delivery is the norm and some companies offer intraday delivery. Does this impact you? Some companies are going direct to consumer and cutting out distributors. Can you afford to not own the customer relationship?

Answers to these tough questions will impact your operating model and network design decisions for years to come.

3. Integrated operational excellence. Now more than ever, the supply chain must become an integral part of business planning. To illustrate, the supply chain leader of a large company that sells sanitizer and antibacterial products

attributes his company’s success during the pandemic to a relentless focus on integrated sales and operations planning. This means shared metrics and structured processes for decision-making across sales, marketing, commercial, manufacturing, and supply chain.

Incentives are also important in making integrated operational excellence work. For example, sales executives should receive bonuses based on how much they reduce waste and inventory, in addition to how they grow sales. When the supply chain is disconnected from sales, marketing, finance, and operations, and each function operates under a different set of performance metrics, poor results are predictable. Operational excellence means company-wide coordination in supply chain planning, with everyone aligned to the enterprise’s key performance indicators.

5. Digital transformation. Amid an increasing number of unplanned disruptions, traditional global supply chain structures are geared toward cost and speed. An enterprise can often handle the occasional supply chain breakdown, but it may not have the right technology, data quality, or updated processes to effectively thrive in situations such as COVID-19.

Supply chain leaders should ask whether they can monitor supplier risk in real time, and then activate the appropriate contingencies in case of major disruption. Can your systems communicate with supplier systems, especially when catastrophe hits? What happens when your equipment is down, or your products are loaded to the wrong trucks? When a crisis hits, can you keep going with 60% of your people but at 100% of your capacity?

A fully digital supply chain can help offer decision-makers the right information

Supply chain leaders have an opportunity to step back and ask: “What’s my organization’s purpose and business model, and how does our supply chain align?”

Driving operational excellence across the end-to-end supply chain will take leveraging enablers, such as automation, augmented with a tax-effective operating model and incorporation of global trade strategies that keep costs down.

4. The future of work. Operational excellence strategies must align to the workforce of the future. As consumer needs and behaviors have shifted, so have the needs of employees. With COVID-19 still raging, long-term shifts in where work is performed will drive the makeup of our cities and states, and national policies.

The pandemic offers an opportunity to rethink how, where, when, and why employees, associates, and suppliers come together to drive business value. Digital will have a profound impact on how work is performed, and companies that put humans at the center of their digital transformation will enjoy a significant competitive advantage.

to manage various forms of disruption, and often at the moment they occur.

LOOKING FORWARD

Some companies will certainly fail in the next 12 months because of the pandemic. As a result of this significant disruption, there will be a change in behaviors from consumers to suppliers to manufacturers and beyond. There will also be more significant interruptions. Can you spot these trends and make changes on the fly before they detrimentally affect your company?

The supply chain must keep moving and keep up. The survival of your company likely depends on it. ■

The views reflected in this article are those of the author and do not necessarily reflect the views of Ernst & Young LLP or other members of the global EY organization.



[INSIGHT]

GREENLANDSCAPE

by Ryan Purcell

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Healthier Planet = Healthier Bottom Line

Supply chains have a massive impact on the earth's air, land, and water ecosystems, accounting for 5.5 times the emissions of a company's direct operations, according to CDP.

To reduce these effects, companies must expand their focus beyond direct costs and simplistic service metrics and take a broader view to understand the sustainability and risk considerations in their network. This is not only the right thing to do, but it's also good business. If done properly, the following changes can promote a healthier planet and a healthier bottom line.

1. Shorter supply chains. Air pollution and carbon emissions can be cut drastically by making supply chains shorter and more efficient.

Opportunities to reduce the "length" of a supply chain can fall across several dimensions: physical distance, lead time, and the number of echelons or levels.

The first—distance—is easy to understand. If you drive, fly, and ship each product across a shorter path, expect the emissions impact to go down.

Reducing lead times helps by driving inventory out of the network and reducing the potential for waste. Removing levels or handoffs in a network reduces complexity and has positive impacts on inventory, lead times, and transport mode utilization.

2. Digitization. Supply chain digitization is happening at a rapid pace. Recent advancements in algorithmic intelligence and cloud computing give supply chain practitioners innovative technologies at their fingertips. These developments enable them to maximize supply chain efficiency, therefore creating smarter and more sustainable networks.

To truly make smarter, more sustainable supply chains a reality, companies must be able to look at their whole supply chain from the start to the last mile. Technology such as "digital twins" enables this, as you can replicate and test your supply chain strategy, anticipate demand changes and stock impacts, and understand root causes and bottlenecks.

3. Circular supply chains. To embrace sustainability, companies should move away from traditional linear supply chains to a more circular version. Circular supply chains are based on the economic model of increased productivity and reduced waste by employing methods such as reuse, repair, rental, sharing, refurbishment, remanufacturing, and recycling.

Improving the efficiency of returns processes can only take you so far. For large-scale changes to be made, many industries and product categories need a paradigm shift.

4. Adaptability and resilience. The pandemic has highlighted the need for supply chains to be adaptable and resilient to unforeseen circumstances.

This resilience might take the form of optionality in the network but should start with reducing complexity wherever possible. Fewer echelons/layers in the supply chain mean fewer places for the network to break, and makes it easier to understand where to focus contingency plans and implement them when things inevitably do go wrong.

The ability to understand the tradeoff between cost savings and impacts on complexity and resilience will be an area of increasing importance for businesses across all industries.

Achieving truly sustainable supply chains requires a change in both mentality and practice. It's time to rethink the standard "take-make-waste" supply chain strategy. Forward-looking businesses that can make their supply chains more sustainable are set to benefit from lower operating costs, increased resilience to unexpected situations, better brand image, and higher customer loyalty, while helping to create a sustainable future for people and the planet. ■

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3PLLINE

by *Dave Bush*

Vice President of LTL Procurement & Technology, Coyote Logistics
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FTL vs. LTL: What's the Difference?

Understanding these seven key differences between shipping full truckload (FTL) and less than truckload (LTL) allows shippers to achieve the best possible results and support planning.

1. Increased freight handling.

With FTL, a product ships straight to its destination and the seal remains unbroken on the trailer (unless it's a cross-border move). A single driver is usually responsible for both pickup and delivery.

With LTL, the goods likely load and unload across multiple trailers and terminals throughout the journey. This increased handling can escalate the likelihood of potential product damage, though LTL shipments will still arrive in good condition if proper packaging techniques are leveraged.

2. Freight class variation. Carriers moving an FTL shipment typically aren't as concerned with the exact commodity specifications. Product specifications—palletized, hazmat, or oversized—generally offer enough information to provide accurate pricing.

LTL rates often vary more significantly, even if the mixed commodities move in the same lane with the same number of pallets. All LTL carriers use the National Motor Freight Traffic Association's freight classification system to categorize commodities by attempting to account for their density, value, handling characteristics, and stowability.

3. Incremental accessorial charges.

Since FTL drivers stay with a load from pickup through delivery, they are closer to the process and limit accessorial charges. FTL drivers are likely to worry less about taking a 15-minute driver assist or detention during a multiple-day transit.

With LTL, delays or unexpected consignee demands often result in charges since these carriers need to be paid for services rendered. Additionally, the provider needs to stay moving to stay profitable. In these cases, remember the total potential cost savings with LTL versus FTL. With LTL, it is also vital to understand the requirements at delivery to improve front-end quoting accuracy.

4. First-come, first-serve pickup (FCFS) windows. While FTL drivers schedule a firm appointment time, LTL drivers require more flexibility since they pick up multiple shipments daily. Delays can occur and compound, which impacts delivery windows. Typically, LTL pickup times aren't guaranteed, with two-hour (or more) FCFS windows being the industry standard.

5. Reweighing/reclassifying products for accuracy. With FTL, product inspection doesn't occur until the load

gets to the receiver. The exception is an FTL driver stopping at weigh stations to verify the truck is under the 80,000-pound legal limit. With LTL, the origin terminal reinspects the load, and each order is likely reweighed by a forklift or floor scale to ensure accuracy.

Based on commodity profile, the freight might go through a dimensioner, which automatically scans it to determine weight and dimensions. If the dimensioner detects the product's specifications don't match the bill of lading, then the carrier reclassifies the freight, which could affect the rate.

6. Uninterrupted transit. FTL transit can be predictable if the driver makes a timely pickup and goes straight through to the receiver. Total mileage, hours of service, posted speed limit, and estimated traffic determine arrival time.

Loads moved via LTL, however, seldom follow direct routes and will likely take longer than FTL. Unless a shipper pays a premium to guarantee the quoted transit, delivery dates are estimates.

7. Differing trailer specs. FTL carriers typically drive 53-foot trailers with swing doors that are 102 inches wide and have clearance heights of 110 inches. LTL carriers' trailers maintain the same specifications, except for roll doors in place of swing doors. This lowers the clearance height to 100 inches, slightly reducing their overall capacity. ■

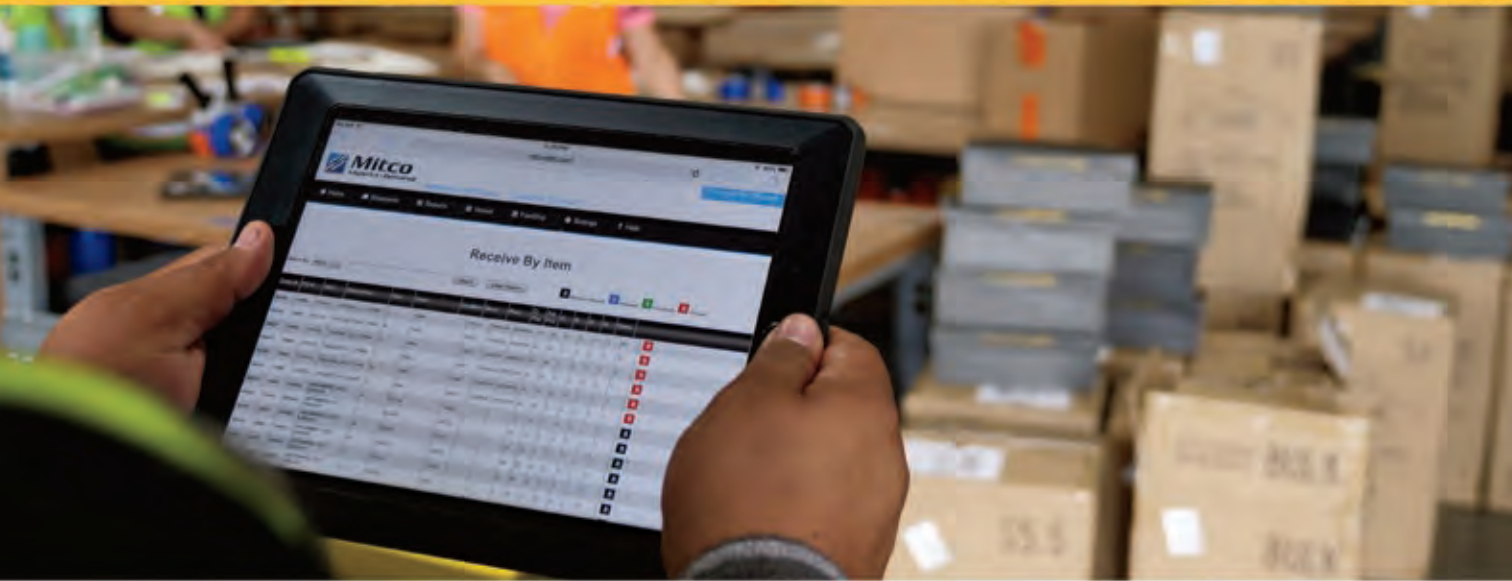


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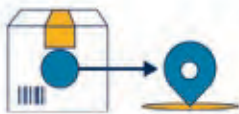


THE GLOBAL GATEWAY SOLUTION WITH THE FLEXIBILITY
AND TECHNOLOGY NEEDED FOR BUSINESS GROWTH

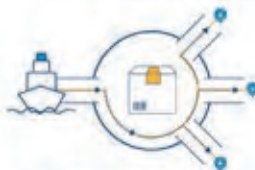
CORE SERVICES



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Transloading



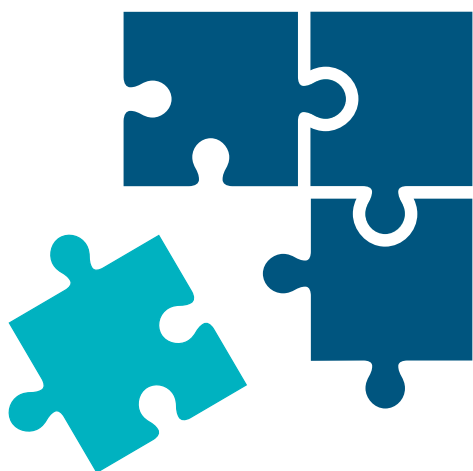
Transportation



Drayage



From revealing how to increase e-commerce efficiencies to outlining strategies for thriving amidst disruption and unprecedented demand spikes, these case studies highlight ingenuity and the ability to solve complex supply chain, logistics, and transportation challenges.



Supply Chain Challenge? **SOLVED!**

102 3PL OUTSOURCING BEYOND THE INITIAL GOALS
RedStone Logistics

103 MODE SHIFT TO ELIMINATE SUPPLY CHAIN
DISRUPTION
PITT OHIO

104 SOLUTIONS FOR THE UNPRECEDENTED
CFI

105 GETTING CRAFTY WITH
SUPPLY CHAIN SOLUTIONS
Verst Logistics

106 USING ARTIFICIAL INTELLIGENCE TO INCREASE
FORKLIFT SAFETY
Holman Logistics

107 RETAIL OPTIMIZATION
THROUGH A REVAMPED NETWORK
Hub Group

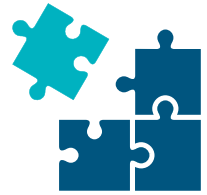
108 PARTNERING WITH GET US PPE TO PROVIDE
COVID-19 RELIEF TO THE NAVAJO NATION
Echo Global Logistics

109 WAREHOUSE SAFETY BEST PRACTICES:
BUILDING A PROGRAM
MD Logistics

110 SEKO PARTNERSHIP PROVIDES E-COMMERCE
EFFICIENCIES FOR RETAILERS
SEKO Logistics

Supply Chain Challenge?

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3PL Outsourcing Beyond the Initial Goals

RedStone understands that cost savings are just a part of each client relationship; a 3PL must provide more if the relationship is to withstand the demands of an ever-changing supply chain.

THE CHALLENGE

Outsourcing logistics operations to a 3PL isn't new. Unfortunately, disillusionment after a year or two isn't new either and can result in dissatisfaction. The experience of a RedStone Logistics client that manufactures and distributes outdoor recreational equipment across North America illustrates this challenge.

For Alan, the company's director of distribution and domestic logistics, his frustration was at a point that he knew he had to make a change. "We hired a 3PL to help us save money and ultimately to turn our supply chain into a competitive advantage. Early on, the savings were there, and the 3PL team did everything we told them to. But," he added, "why should we have to tell them what to do? They are supposed to be the experts."

"Our business was growing, and we were not sure that our 3PL was looking beyond cost savings to improve our supply chain as business expanded. What we really needed was a partner who would drive innovation and challenge our ideas if they weren't the best for our business."

Clients are looking for additional assistance and efficiencies, not just reduced costs. Some 3PLs, having worked hard to deliver on early promises, fall into an operating rhythm with current clients and then must turn their attention to meeting expectations of



Growth industries such as recreational equipment require a 3PL partnership that looks beyond initial cost savings to improve supply chain efficiency and customer satisfaction.

new clients that are coming onboard. Culturally, the two organizations may be focused on different priorities.

THE SOLUTION

RedStone understands that cost savings are just a part of each client relationship; a 3PL must provide more if the relationship is to withstand the demands of an ever-changing supply chain. The RedStone answer was a solution designed specifically for the demands of the organization's industry and customer requirements.

"Many 3PL organizations rely on price alone to drive improvements, quickly running out of options to improve efficiencies after lower costs are no longer an option. RedStone solutions start with getting to know our clients—their challenges, systems, processes, people, and most importantly how they measure success—before we do anything else," commented Jim

Ritchie, president and CEO of RedStone Logistics.

RedStone focused its work for Alan on simplifying the entire supply chain from the beginning, not just on reducing the cost of shipping their products.

"We worked with Alan and his team to ensure we met their near-term requirements and anticipated changes in their supply chain," added Ritchie. "We invested in dedicated resources to meet the strategic direction of the

company, the needs of its customers, and the plan for how its supply chain should react to ever-changing logistics requirements."

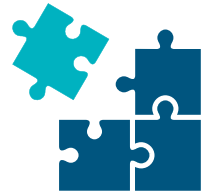
These specialized resources provided by RedStone reach into every corner of the business to drive continuous improvement, resulting in years of client satisfaction. Eliminating client disillusionment is a fundamental imperative for RedStone Logistics, creating client relationships that don't merely survive but thrive beyond the first year of cost savings.

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Supply Chain Challenge?

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Mode Shift to Eliminate Supply Chain Disruption

When supply chains require unique equipment and depend on damage-free, on-time service, partnering with a carrier such as PITT OHIO that can execute mode optimization strategies can impact the success of your business.

Mode optimization is the practice of putting the right size shipment on the right size truck. When this hospitality company struggled with on-time LTL service at their hotels in Ohio, they began to analyze their current shipping environment and sought expertise from PITT OHIO to formulate a solution.

THE CHALLENGE

In the hotel and hospitality industry, on-time delivery by 4 p.m. is critical to successful staffing and hotel operations. Additionally, hotels prefer deliveries during non-peak hours for guests and require the products to be available in the morning for staff to complete their job of cleaning and restocking guest rooms. Without a dock at most locations, a lift gate is necessary and, in most cases, the driver will need to enter the hotel to make the delivery. Serving as an extension to their business, the hospitality industry insists on friendly and courteous delivery drivers dressed in uniform.

In addition to service-sensitive requirements, the hospitality industry also experiences fluctuating shipping volumes throughout the month. Budgets are distributed to hotels at the beginning of each month and most spend their dollars in the first two weeks. At the beginning of the month, a hotel could receive an entire pallet, but by week three, the delivery may just be one box.



THE SOLUTION

By understanding their business model and changing needs in the hospitality industry, PITT OHIO was able to not only identify the issues causing poor on-time delivery service, but was also prepared with a recommendation to solve the logistical challenge.

Less-than-truckload was proving ineffective because of the lift gate requirements, delivery windows, and fluctuating shipping volumes.

With a foundation of trust with PITT OHIO, the customer agreed to their first ever “mode shift,” and PITT OHIO created a hybrid solution with a fleet of straight trucks and cargo vans. The straight trucks are equipped with lift gate equipment and are able to deliver the pallets of products ordered during the first two weeks of the month. The cargo vans are used at the end of the

month to deliver the boxes of smaller shipments. During periods of spike at the beginning of the month, PITT OHIO will handle the overflow of pallets with its tractor trailers.

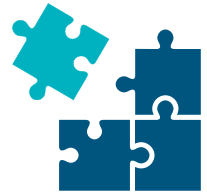
Although the customer was hesitant at first, PITT OHIO proved the validity of the solution in Ohio with consistent on-time, quality service. Today, PITT OHIO manages the relationship with 6 carriers to meet the unique delivery requirements in 21 different states.

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Solutions for the Unprecedented

Meeting the unprecedented challenges of 2020 and personifying resilience, CFI leveraged its vast resources and delivered creative, effective solutions for its partners.

North American truckload transportation historically experiences a slower Q1-Q2. 2020 presented an exponential surge within the first few weeks of the year. Retail brought dynamic swings of demand, the unforeseen evolution of e-commerce, and the purchasing impacts of a pandemic to markets worldwide. For many reasons the word of the year was “unprecedented.”

CFI's commitment to delivering for our customers and weathering market conditions led us to creative solutions throughout the year. With good reason the resounding word of the year at CFI in 2020 was “resilient.”

THE CHALLENGE

A major retail supplier in the consumer household products and healthcare industry experienced an increase in demand brought on by COVID-19. Their essential product line required additional capacity due to their production growth. Distribution centers fell behind while demand continued to increase at exponential rates.

THE SOLUTION

With 70 years of experience, CFI partnered with this business to ensure necessary products were delivered to retail stores across the country. Together we ensured frontline personnel was equipped with essential products and



that consumers remained protected amidst dire times. Daily collaboration with logistics and schedulers helped us clearly understand the challenge that their production lines were facing.

We put a plan together, ensuring our customer was top priority. When a load was ready, CFI was there without delay to ensure successful pickup and delivery. Collectively, we anticipated the surge, alleviating congestion at distribution centers and continued to keep America moving forward.

THE CHALLENGE

One of CFI's retail partners suffered massive store closures and severe disruption to their supply chain originating in Asia during the first two months of the pandemic. Like so many businesses and retailers across the nation, they struggled to find solutions for delivering to customers with efficiency.

Fortunately, they had recently started a significant e-commerce initiative. The supply chain challenge remained,

exacerbated by a model that relied heavily on intermodal transportation. While their e-commerce business boomed, they were forced to deliver delayed imports to their distribution centers and stores with unanticipated speed and volume.

THE SOLUTION

With a long-standing partnership, CFI proposed

handling their transfers between distribution centers. We added dedicated routes to secure the extra capacity our partner needed, running coast to coast service. Utilizing our CFI Logistics, we were able to find solutions for the additional surge in truck capacity for months to follow.

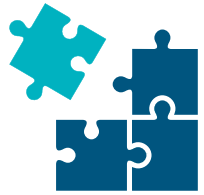
Transport America, a CFI sister company, enlisted several dedicated trucks to help with the rise of capacity. Belonging to TFI International allows CFI to leverage a vast amount of resources, creating solutions for our partners and adjusting to the unprecedented challenges of 2020.



To learn more:
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Supply Chain Challenge?

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Getting Crafty with Supply Chain Solutions

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

THE CHALLENGE

A high-growth arts and crafts supplies company decided it had to pursue a new path to improve its limited supply chain capabilities. Sales growth during the fourth quarter peak period had created challenges in getting orders processed accurately and on time. While growing sales is a very good thing, the problems that resulted were significant, impacting customer satisfaction and lowering fill rates. Additionally, forecasting in a high-growth business was difficult, and staffing for a peak season that lasts only a few

days was nearly impossible. Shipping out of a single distribution point in California to reach East Coast customers added to the problems. As peak hit, the management team had to work side by side with their 3PL's employees picking, packing, and shipping orders to keep up with volumes.

THE SOLUTION

The company began its search for a partner to execute its supply chain and improve customer satisfaction. The search led the company to Verst.

Verst created a plan to utilize its 396,000-square-foot fulfillment facility located in a key Midwest logistics corridor. Additionally, Verst partnered with Locus Robotics, a leader in state-of-the-art robotic technologies, to address peak season challenges by incorporating computer-guided bots for picking and packing speed and accuracy.

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

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

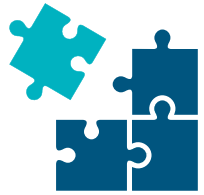


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Holman Logistics Uses Artificial Intelligence to Increase Forklift Safety

Holman partners with OneTrack to bring AI solutions to the issue of forklift accidents.

THE CHALLENGE

For Holman Logistics, nothing is more important than the safety of its team members and the customers for whom they provide manufacturing logistics, warehousing, omnichannel fulfillment, and transportation services.

“Our core values set the foundation for the work we do, and we have no more important core value than safety. We constantly seek technology, training, and other innovative resources to help us maintain our superior safety performance,” commented Brien Downie, president of Holman Logistics.

Holman operates forklifts in all of its locations across the U.S., and operations managers and customers understand the human and financial costs of forklift-related accidents. Holman always monitored and tracked forklift activity; however, management wanted to understand the root causes of mishaps and find out if it was possible to create a system to warn of problems and prevent accidents from occurring.

THE SOLUTION

Along with ensuring that it hires, trains, and develops technically proficient forklift drivers, Holman chose to partner with OneTrack to leverage that company's expertise in Computer Vision and Deep Learning, also known as Artificial Intelligence (AI).

Computer Vision refers to software processing images from an onboard camera. While the concept of Computer



Holman custom logistics solutions are both cost-effective and safe. AI technology provides real-time feedback and detects patterns to prevent collisions.

Vision has been around a long time, recent advancements in Deep Learning allow computers to detect, recognize, and predict high-level concepts from images with superhuman accuracy and reliability.

A system powered by Deep Learning has the ability not only to detect that an incident occurred but also to learn why that incident occurred. Most importantly, it can recognize the same pattern in the future and provide a real-time warning when it thinks a similar incident is about to happen. Such a system continues to learn while deployed, actively preventing incidents and continuously getting better at doing so. As the system learns, drivers become safer and more effective, and the number of accidents can be reduced over time.

These technologies create a safer, more efficient workplace for everyone, which is important for Holman because

processes, requirements, and workflows can vary greatly by customer and location across its network of facilities.

Brien Downie concluded, “I am confident that these AI tools, along with our never-ending safety focus, are helping us move steadily closer to our goal of accident-free operations. AI technology can have a positive impact on the safety performance of the entire industry.”



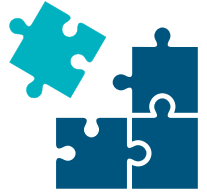
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Retail Optimization Through a Revamped Network

With its customer base and volumes surging, a CPG company turned to Hub Group for a dynamic solution that streamlined its handling process, increased service levels, and reduced chargebacks.

THE CHALLENGE

A fragmented transportation network can have weighing effects on a supply chain as multiple touchpoints increase the possibility of freight being mishandled and products becoming damaged. Such issues loomed over a premium CPG brand as its misaligned network pressed numerous Over, Short and Damaged (OS&D) claims from retailers.



With an expanding customer base and recent surge in volume, the company engaged Hub Group to perform a network analysis and construct a dynamic solution to help with these challenges and support expansion. After finding inefficiencies with the picking and outbound transportation process, Hub Group's dedicated teams sought to optimize the handling of the company's inventory throughout the entire transportation network.

THE SOLUTION

The customer moved to a dual warehouse inventory hold solution with Hub Group to alleviate chargebacks

and improve on-time efficiency for its retail business. This solution minimized touchpoints throughout the network, essentially streamlining the handling process while increasing service levels and drastically reducing chargebacks.

Shortly after this implementation, the customer's inventory volume quickly grew to more than 15,000 pallet locations, significantly higher than the 10,000-12,000 pallet forecast. Hub Group worked through the client's request to receive more than 6-10 inbound appointments per day, align inbounds on slip sheets versus pallets, and manage an enormous product catalog, as well as implement display build solutions.

As the company's business has grown, so has collaboration with Hub Group. After seeing the benefits of the inventory hold solution, the company allowed Hub Group to ship pre-paid LTL when experiencing capacity issues. The company received full order visibility and shipment tracking through Hub Group's 24-hour online freight management portal. Now, with enhanced visibility and a streamlined network, the

company entrusts Hub Group to manage its transportation process to additional retailers throughout its network.

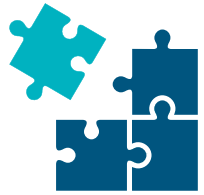
With Hub Group, customers receive dynamic solutions within a flexible network, putting their teams in a ready position to support volume surges and business expansion.



To learn more:
email: info@hubgroup.com
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Supply Chain Challenge?

SOLVED



Partnering with Get Us PPE to Provide COVID-19 Relief to the Navajo Nation

Echo Global Logistics helped a nonprofit organization deliver thousands of water containers to the Navajo Nation in support of COVID-19 relief. *By Dave Menzel, President & COO, Echo Global Logistics*

THE CHALLENGE

With one of the highest COVID-19 infection rates in the country, the Navajo Nation has been hit especially hard. At Echo Global Logistics, one of our core values is “Do What’s Right,” so when we had the opportunity to make a positive impact for the Navajo Nation, we did not hesitate to step up.

For generations, the Navajo Nation has faced challenges in accessing safe, running water. In fact, one in three Navajo citizens does not have indoor plumbing. Without easy access to water, it’s been harder for the Navajo Nation to fight against COVID-19.

One of the groups providing aid to the Navajo Nation is Get Us PPE, a nonprofit organization that works to get personal protective equipment (PPE) and related infection prevention and control supplies to those who need it most. Their team of volunteers works with various organizations to gather and distribute PPE to underrepresented or medically underserved communities.

Get Us PPE (getusppe.org) had thousands of water containers that needed to be transported to the Navajo Nation so those without indoor plumbing could store large amounts of water in their home.

THE SOLUTION

After learning about the shipping needs of Get Us PPE, Echo donated the transportation of 3,800 water containers



to Window Rock, Arizona, the capital of the Navajo Nation. Echo fully managed the transport and delivery of the 56 pallets of water containers, so Get Us PPE could spend more time focusing on their core mission of helping those in need during this difficult time.

“We are grateful to Echo for partnering with us to get thousands of water containers to the Navajo Nation,” said Shikha Gupta, MD, vice president of Get Us PPE. “They didn’t hesitate to lend their expertise to our cause. This pandemic has brought to light the inequities that have always existed in our healthcare system, and it is increasingly apparent the COVID-19 crisis is a health equity crisis. Partners like Echo help us empower communities by getting PPE to the front lines of the pandemic.”

“We’re pleased to collaborate with Get Us PPE as they work relentlessly to source and distribute critical supplies to those most vulnerable,” said Doug Waggoner, chairman of the Board of Directors and chief executive officer at Echo. “At Echo, giving back to the

community is an integral part of our culture, and we’re proud that we are able to provide aid to the Navajo Nation during this challenging time.”

Throughout the pandemic, Echo has worked with multiple partners to aid in COVID-19 relief. However, managing the shipment of water containers to the Navajo Nation held a special significance at Echo, as one of the logistics professionals who worked to coordinate this shipment is a member of the community herself.

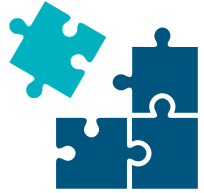
“As a member of the Navajo Nation, I have been very worried about our elders, first responders, and others who are vulnerable in our community,” said Amy Cegielski, client visibility solutions manager at Echo. “When I learned that Echo was donating the transportation of water containers to the Navajo Nation, I gladly volunteered to coordinate this shipment. I’m proud to work for a company like Echo that is committed to giving back to others and making positive impacts on our communities.”



To learn more:
email: info@echo.com
phone: 800-354-7993
web: echo.com

Supply Chain Challenge?

SOLVED



Warehouse Safety Best Practices: Building a Program

To build a safety program that has the strength and support to last, follow these practices and leverage your staff's experience and expertise.

THE CHALLENGE

Having safety programming is not a new phenomenon for most 3PLs that operate today. Perhaps you host OSHA sponsored and certified training courses, or support customer supplied training sessions on the proper handling of their products.

These are standard practices within our industry and are all necessary to ensure your team stays safe. However, as the warehouse continues to evolve, there are other opportunities to educate your team on how to maintain a safe environment and strong safety record.

We've seen how critical it is to have a safety program in the warehouse with the COVID-19 pandemic. This pandemic has highlighted the importance of having good hygiene practices in place to better protect your team from illness. Not only are practices and procedures important, creating a culture that places an emphasis on safety and cleanliness is equally as important and has the ability to keep your team members healthy and safe when the unexpected happens.

THE SOLUTION

At MD Logistics, we understand that a safety program is not a "one size fits all" solution. For us, we saw an opportunity to give our warehouse team a chance to collaborate and express their own ideas. Before you can begin to build a lasting plan, you have to build a program that has the strength and support to last!



Vision. It's important to have an understanding of what you want your program to look like and how you can measure results. Taking the time to clearly communicate a complete vision will allow you to see real results, minimize accident reports, and create an overall safer workplace.

Gain Support. Having the support from top level management shows the rest of the organization that its leaders support the changes.

Build a Team of Champions.

Identify a team of individuals across all areas of the warehouse floor, upon whom you can rely to carry out the educational programming you develop. To get the best results, these members should be comprised of volunteers who have demonstrated initiative and are safety conscious, further solidifying

a commitment to building a safe work environment.

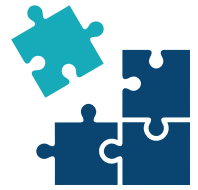
Gather Feedback. Ask for feedback from your committee of volunteers to understand where there are training gaps in regard to safety in the warehouse. Giving them a voice allows them to feel like their opinion matters and allows you to create a training program with valid concerns from your own warehouse.



To learn more:
email: info@mdlogistics.com
phone: 317-838-8900
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Supply Chain Challenge?

SOLVED



SEKO Partnership Provides Ecommerce Efficiencies for Retailers

Retailer Shein streamlined supply chain operations by leveraging the partnership between Air-City and SEKO, allowing shippers to move express ecommerce orders efficiently across international borders.

In June 2019, SEKO acquired New York-based freight forwarder and Cross Border ecommerce shipping expert, Air-City, Inc. to become **the only forwarder with the ability to process Type 86 (T86) shipments via air freight, as well as ocean freight.** Looking at clients through a different lens, the team approaches partnerships, not for the sale, but to build lasting relationships that make a difference.

THE CHALLENGE

After much research, initiative, and a trip to Shein headquarters in Guangzhou, China, e-tailer Shein agreed that swapping their ECCFs (express consignment carrier facilities) for a trial of T86 could drastically improve their supply chain.

Air-City's Section 321 and T86 entry expertise provided Shein with the ability to manage bulk parcel Customs clearance to avoid delays and allow for the quick release of thousands of parcels at low cost with service speed options.

THE SOLUTION

Although big e-tailers thoroughly understand their industry, sales can be restricted by not knowing what is needed. Air-City had the product to decrease time, reduce cost, and streamline their supply chain.

Shipping 1 million parcels a month, Air-City's swift implementation of T86 opened doors to combat Shein's sales



plateau by enabling more choices and providing increased promotional opportunities for new business.

Effective Oct. 1, 2019, T86 offered Shein an instant savings of \$1 per parcel—totaling a staggering \$1 million per month savings. In addition to the monetary savings, T86 supports remote filing and is completed electronically—which enables expedited clearance of Section 321, T86 deliveries using the Automated Broker Interface (ABI) to provide the necessary information and receive the required release messages.

For all products being shipped, Air-City's innovative search software enables the conversion of shipper-provided HS codes for all products being shipped into U.S. acceptable Harmonization Codes.

Air-City's bonded warehouses in major gateways, such as JFK, enable Shein to control their own KPIs and

service levels. Transit time is faster, and a steady foundation, based on a shared drive for efficiency and partnership, has been built.

Air-City is now one of Shein's biggest Cross Border brokers. Their Section 321 low value shipment and T86 Customs clearance expertise provides Shein with the necessary liaison to streamline operations and efficiently execute transactions to maximize profits.



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TIPS FOR A

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SUPPLY CHAIN

INBOUND TRANSPORTATION

01 Dive in with your suppliers. Ask what cost and efficiency benefits your vendors are providing by using their carriers or shipping schedules. The customer pays one way or another, so push for carriers that demonstrate service and reliability, not those who move operational or cost inefficiencies from a vendor's dock to the customer's dock.

02 Set and apply compliance standards. Communicate expectations around overages, shortages, documentation, and damage. Whether you control the freight or not, focus requirements (or penalties) on issues with measurable impact. Many programs spell out fines as a backstop, but more often they exist to encourage problem-solving.

03 Look for sponsorship from the C-suite. Because logistics and transportation groups might not speak the language of procurement, find shared parameters that make inbound a must-do initiative. Consider go/no-go metrics in terms of impact to product

margin, inventory cycle time, and safety stock.

04 Use technology for cost comparison. Many vendors provide freight allowances for purchase orders or can be convinced to include them. However, it is a heavy lift to determine what is more cost-effective when managing a high volume of vendor shipments. Use a transportation management system (TMS) to compare allowances against real-time market costs.

05 Review networks and match freight flow. Utilize inbound carrier capacity by matching outbound freight. Creating opportunities for carriers to

plan loaded miles in two directions can be as simple as a map with an overlay of suppliers, distribution centers, and customer locations to visualize opportunities. Network or center of gravity studies can help uncover the value your location or schedules create for both vendors and carriers.

07 Consolidate loads, choose the best mode. The cost to unload 10 to 14 less-than-truckload shipments can be more than five times the cost of unloading a single truckload. Everyone wants to ship a full truck, and the right third-party logistics (3PL) provider or TMS can identify when loads can be consolidated from purchase

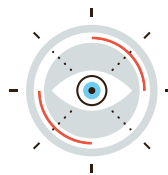
orders or through milk runs across geographically similar vendors. Wins here add up.

08 Remember the yard. Most purchasing groups can appreciate improvements in receiving cycle time. Aim to improve yard flow by implementing appointment scheduling in a user-friendly supplier portal.

09 Choose how you control wisely. Inbound freight is a final frontier in supply chain management strategies for good reason. Appreciate whether the effort to analyze or take control of your inbound freight requires more overhead than your organization is ready to invest in. Consider choosing a partner who can validate whether there is an opportunity or if the status quo makes sense.

10 Review inbound freight and repeat. When vendors change or distribution centers move, an inbound freight analysis can become obsolete. Set a regular cadence of review internally or with a service partner.

06 Make visibility a prerequisite. Improving visibility can help operational planning, avoid lumber charges, and set customer expectations more effectively. Go beyond the advance shipping notification and push for enhanced shipment visibility during supplier negotiations. In-transit geolocation technology and predictive parcel updates have become more accessible through technology and 3PLs.





COLD CHAIN

11 Utilize appointment scheduling tools. An inbound and outbound appointment scheduling tool prevents product from sitting in staging locations for too long, which risks crowding in the staging areas as well as high product temperatures.



12 Implement high-speed, narrow doors. High-speed, insulated doors keep temperature energy loss costs to a minimum. Consider installing narrower doors, as it is rare for two lift trucks to pass through the door at the same time. Having separate entrance and exit doors is a great way to save on energy costs.

13 Ensure workforce safety. At minimum, cold storage facilities need to follow Occupational Safety and Health Administration (OSHA) and state guidelines to ensure that workers take breaks and don't work in the freezer for too long. On average, freezer warehouses have higher labor turnover

than normal warehouses, so it is important to be flexible and understand your workforce's wants, needs, and overall safety.

14 Maximize storage and storage density. The cost of operating a cold storage warehouse is high, so consider best practices to maximize cubic storage. Storage solutions, such as double deep racking, pallet flow racks, or an automated storage and retrieval system (AS/RS), allow for storing more product in the same area.

15 Enable full EDI integration. Cold storage warehouses should encourage vendors

to provide electronic data interchange (EDI) integration capabilities. EDI saves receivers from having to record data via radio frequency device or paper. Not only are these methods difficult to record with gloves, but they also increase the risk of product getting out of its allowable temperature range.

16 Invest in advanced cold chain monitoring. Onboard temperature monitoring equipment can offer real-time visibility and mitigate the risk of loss due to product temperature. Advanced data gathering across the supply chain can ensure product safety and optimize the supply chain network.

17 Understand the requirements. It is common for customers and government regulators to have specific requirements around shelf life, product dating, product mixing, labeling, tracking, and

tracing. It is imperative to use a warehouse management system that can handle advanced configuration around these needs. Due to the Food Safety Modernization Act, being able to document all steps in the supply chain is crucial.

18 Consider automation. Automation can reduce the number of workers and time spent in the freezer. Some examples include an AS/RS, a palletizer, a pallet inverter, or robots that can bring product to ambient rooms for picking.

19 Try different cycle counting processes. To limit the amount of time spent in the freezer environment, enable a count-back or count-to-zero process for your pickers. A count-back is when pickers count how much product is left in a location after a pick. A count-to-zero prompts pickers to confirm that pick locations are empty when they are depleted.

20 Invest in freezer-rated equipment.

Purchase vehicles, radio frequency devices, and material handling equipment that are specifically made for a freezer environment. This equipment interacts better with gloves, and the batteries degrade slower in the cold than normal equipment.





PHOENIX

LOGISTICS

The Phoenix Logistics team is driven by a sense of urgency, determined to be uniquely remarkable, and strengthened by a state-of-the-art warehouse management system. Tell us your challenges and let us provide you creative options and competitive solutions.



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21 Tap your 3PL's range of services. Warehousing, fulfillment, transportation, value-added services, technology—the more help you can obtain from one provider, the more seamless, scalable, and cost-effective your supply chain will be. Centralizing logistics helps to ensure that you provide consistent service and offers better predictability and reliable deliveries. If getting closer to your customer is a priority, consider leveraging your provider's facility network.

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

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

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

25 Start at the end. Before entering a 3PL partnership, consider how you will define its success. Improving the customer experience? Enhancing your brand? Gaining

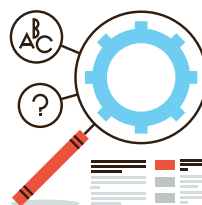
visibility? Offering fast or free delivery? All of the above? Clearly defining your desired outcome can help identify priorities and give clear direction to your provider. Then confirm that your 3PL can accommodate those requirements.

26 Nail down necessary capabilities and resources. Document your requirements thoroughly by creating an itemized list of requirements for achieving your desired outcome,

such as strategically located facilities, a robust inventory management system, customization capabilities, and call center support, among others. This detailed solution design and requirements document communicates who, what, why, and how.

28 Consider your customers' service-level expectations. Do your customers expect same- or next-day shipments, or would they be satisfied with

27 Make a business case to outsource or switch to a 3PL. Assuming it is not a foregone conclusion, it is important to take the time to determine the value—potential return on investment, switching costs, process, and systems implications—around the outsourcing decision. This can take time, not just from an analysis perspective, but also from a cultural or organizational perspective.



two- or three-day service? Are products one-size-fits-all or is personalization required? Communicate these expectations to your 3PL so it can design a solution that meets them.

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

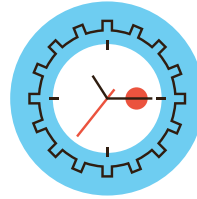
30 Include service-level agreements. Tie service-level agreements to financial incentives for all parties. Everyone has cost, profit, and inflation considerations, so think broadly about how this will play into pricing, which all too often is one-sided.

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

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

33 Look at the time. Once your provider knows your exact requirements and parameters, establish a clear timeline.

Whenever possible, make the 3PL aware of seasonal variations, promotional activity, storage component needs, and inbound/outbound delivery requirements to avoid surprises.



34 Anticipate growth. Your business is always changing and, ideally, growing. Confirm that your provider can scale space, staff, and technology to accommodate your needs—now and in the future. Typically, a shared space environment offers the most flexibility with the least commitment.

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

36 Raising the bar. Your 3PL should pay careful attention to solution design and utilize proven processes to uphold service excellence. Confirm that it leverages methodologies such as Lean Six Sigma to ensure quality and accuracy. Expect your 3PL to spur continuous improvement by sharing innovative ideas to reduce costs, and improve productivity and service.

37 Keep an open mind about new ideas. An experienced provider might

propose a solution you hadn't even considered—adding a distribution node, redesigning the flow of goods through the warehouse, moving product configuration or customization closer to the consumer. Don't be afraid to tap the 3PL's knowledge and best practices.

38 Trust your partner. Your 3PL partner's success depends on your success. They will recommend only actions that are in your best interests.

39 Stay in touch. With advanced technologies and KPIs in place, verbal communication can get lost. However,

communication and collaboration are the keys to continuous improvement. Set and stick to a communication schedule.

40 Prepare for the unknown. Supply chain disruptions—labor stoppages, technology outages, and other risks—can significantly affect your bottom line, so work proactively with your 3PL on disaster preparedness. Brainstorm what-if scenarios and plan for them.

41 Share data. A well-run supply chain depends on data. For example, sharing projected order volumes can help your 3PL secure sufficient space and staffing and prevent service issues. The 3PL can use detailed shipment history to conduct a transportation analysis and determine the most cost-effective network configuration.

42 Collaborate. Recognize your 3PL as a trusted partner who shares your business goals. It has a vested interest in your success and values your input and feedback.





E-COMMERCE

43 Focus on the customer experience. Ensure that your online store's ordering system is easy to use and customers can quickly find the right products. To achieve the right balance, segment SKUs based on what you think customers will buy versus trying to put too much out there and risking the high costs of inventory duplication.

44 Make same-day fulfillment happen. Tools in your arsenal could include system-based, accurate inventory levels by location; inventory positioned close to buyers; customized fulfillment that focuses on expedited delivery; and a delivery platform with options that ensure the right product arrives at the right place and at precisely the right minute.

45 Think big. Shipping big and heavy items requires big solutions and customized delivery options. If you regularly ship heavy items, consider supplementing your service offerings with additional options such as in-home delivery or assembly.

Customers are often willing to pay an additional fee for better final delivery service.

46 Keep score. Smart companies use daily scorecards to gather, compare, and disseminate meaningful, actionable intelligence. Sending a regular performance monitor to company leaders can identify trouble areas today, and lead to future success.

47 Economize on transportation. Use a transportation management system in your fulfillment process to provide insight into the most economical shipping mode, offer product tracking capabilities, and help meet customer service expectations, including same-day and next-day shipping.

48 Promise same-day fulfillment only if you can deliver. If you can't achieve same-day fulfillment, offer a different version, such as same-day shipping for orders placed before a cut-off time, or pickup of an online order at a retail location.

49 Audit freight bills. By using an audit process across all modes, companies know the rate they paid so they can hold carriers accountable for accurate billing. This also enables shippers to identify service gaps and make good decisions going forward.

50 Grow outward. Look beyond today's configuration placement in ways that benefit the consumer experience—backed by purchasing data and freight cost audits. Your company will be better prepared to support increased demand and changes in customers' delivery expectations.

51 React to the consumer, respond to the competition. As consumers look for more information, be prepared to respond to their demands. Making data such as reviews and shipping information readily available gives consumers confidence in your products. Meanwhile, take note of your competition and prepare to move in directions they aren't—giving you the edge when it comes to winning the customer.

52 Sweat the details to maintain SKU-level profitability. Measure SKU-level profit by analyzing landed costs of inventory

items, making sure you offer the right products at the right price. Selling a \$10 item that costs \$12 to produce, market, and ship makes no sense.

53 Align transportation service levels with customer demands.

Consumers have become accustomed to next-day delivery thanks to Amazon Prime. Can or should other retailers follow? Retailers should first understand their customers' needs and wants and then make smart transportation decisions that align with those needs yet are still financially feasible.

54 Alter your pickup lines. Offering alternative pickup locations is not only good customer service but can also help reduce shipping costs.

55 Hang out with the crowd. Utilizing various crowd-sourced providers for last-mile delivery can be extremely cost effective—depending on the retailers' costs and strategy.

56 Get small. Utilize regional small parcel providers. By focusing on a particular part of the United States where demand is greatest, retailers can opt to use just one or create a nationwide network with several of these providers.

57 Seek hidden shipping costs. Accessorial fees—residential delivery fees, fuel surcharges, and requiring a signature upon delivery—can increase shipping costs. Review your invoices regularly to make sure you're not paying more than you should.



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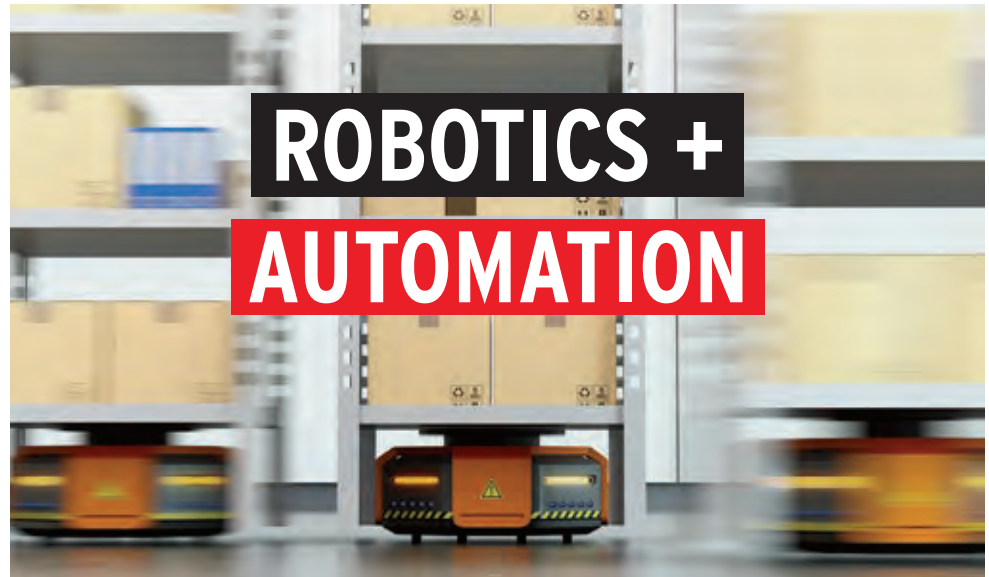
58 Fulfill products in stores. A growing preference for many retailers is to fulfill products in stores versus warehouses. This allows for quicker delivery and potentially lower inventory costs.

59 Manage returns effectively. Managing returns is a necessity in keeping costs down and customers happy. Solutions such as free shipping for returns and returns to stores are popular among retailers.

60 Know your fulfillment options. There are a growing number of fulfillment options from Fulfillment by Amazon, Shopify, UPS, and FedEx, to in-house and more. Know your options but, more importantly, know your cost limits and evaluate. You might be surprised.

61 Consider on-demand warehousing. Warehousing is moving closer to the end customer to provide faster last-mile delivery. This can be pricey. One option is on-demand warehousing. UPS offers a similar solution that may suffice depending on strategy and cost.

62 Skip the warehouse. In drop-shipping, a business is not required to keep products in stock. Instead, the store sells the product and passes the sales order to a third-party supplier who then ships the order to the customer. Sounds great but drawbacks include being at the mercy of your supplier for product quality, fulfillment speed, or return policies.



63 Commit to optimizing warehouse efficiencies. Optimizing warehouse space, equipment utilization, and labor will help determine if your company is ready for automation and also identify priorities for implementing automated solutions.

64 Invest in education and training. Educating forklift operators and technicians will help you achieve better results.

65 Get lean. Lean management is a long-term operational discipline that systematically seeks to improve efficiency and quality by identifying expenditures and eliminating waste in time and materials.

66 Gather measurable data. Implement processes and telematics solutions that provide measurable data and consistent utilization, including performance metrics and scheduled maintenance. Collecting data and implementing intelligent warehouse solutions identifies issues such as hidden costs.

67 Establish operational baseline efficiencies. Even the most advanced technologies won't make your warehouse more efficient if you don't know how to measure and interpret the data. By analyzing data, identifying the problem, and applying a solution, you can create a more optimized warehouse that streamlines operations, creates more space for product, increases workforce productivity, and identifies the equipment most suitable for specific tasks.

68 Implement a LMS. An effective labor management system (LMS) provides business analytics that are key to improving how your workforce works and maximizing labor utilization. An LMS can identify and implement best practices to control costs,

increase margins, make well-informed staffing decisions, and analyze trends for effective forecasting.

70 Do what's right. It is not always necessary to jump into full automation. With shared autonomy, a human and autonomous forklift could see a problem remotely and quickly remedy it. Shared autonomy reduces human fatigue, improves warehouse throughput, and focuses on value-added processes.

71 It's not once and done. Don't be of the mindset that when you go through the optimization process once, you're done. There are always opportunities to improve. Ongoing data monitoring and analysis provide a road map to maximum operating efficiencies.

69 Fire up the energy. The future of the material handling industry lies not only in automation and telematics, but also in pioneering alternative energy solutions to operate more efficiently and sustainably.



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SUPPLY CHAIN LEADERSHIP

72 Have a vision and dream big. Put in the work with your team to find a niche that allows you to revolutionize logistics. Be creative and set your sights on something far-fetched. A great vision should feel beyond your reach. If you could do X in 15 or 20 years, what would it be?

73 Calibrate your culture. Core values are the compass that guides your team's behaviors. These values should be easily recognizable in the best employees. Make them your own, and use them to calibrate everything you do, aligning everyone on your team to a common heading.

74 Plot your seasons and celebrate wins. Track progress toward your vision, honor the milestones along the journey, and build in time to relax and reflect. Find your battle rhythm, and make sure the milestones consider the need for people to recharge. Allow the team to celebrate both at work together and away as individuals. Cultivate this healthy balance and have fun.

75 Brand a clear mission. Who, what, and why are you delivering today? Make the mission as concise and clear as possible. A mission statement ensures you stay grounded in what brings profit and success today, so you can think about tomorrow. Make it visible. Everyone on your team has a purpose tied to this brand; make sure they feel it.

76 Know your role. Every link in the chain—every person, every function—is critical. Make sure your team understands the communication and products they own, so every link in the chain is just as strong as the previous and next. Document the playbook for

the positions on your team, and make sure people work together and understand each other's distinct purpose to avoid turf battles and power struggles.

78 Drop anchor. Each operation has critical anchor points that hold your chain in place. Don't take these strong backs for granted. Invest in and maintain your anchor points and constantly evaluate how they are doing. Reward the success they enable and create more anchors along the value stream.

79 Engineer flexibility. Prepare for change; it is constant. Engineer and design pivot points along

your value stream. Forecast mitigation actions and prepare succession strategies. Built-in flexibility will allow you to weather the storm when the environment suddenly changes, and it will.

80 Delegate and empower. Know how to manage risk, at all levels. Pre-define levels of authority for cost, schedule, and technical levers, then push that control to the lowest level by empowering those closest to the work. Collect and track data to assess the health of your teams' decisions and adjust based on risk tolerance. Data should drive decisions at every level, and everyone needs to be empowered to make decisions with good data.

77 Over communicate; control the message. We live in a world overflowing with information, and it is your job to calm the noise. Your communication must reverberate across 360 degrees—forward visioning, backward reflecting, and sideways sharing. Know your customers, stakeholders, suppliers, and team members. Constantly drive transparency of your messaging.



81 Be vulnerable. Bosses are not superheroes, nor are they mythical creatures. Be great by staying humble and approachable. Be thoughtful and thankful, and show appreciation to everyone who enables your team's successes. Make sure everyone sees the person you are—share your story and inspire theirs.

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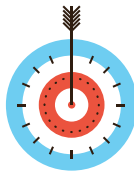
Since PSS was established in 1983, its ongoing mission has been to deliver the highest quality service in the industry. Achieving this goal has taken continuous investments in technology, equipment, and facilities, which has paid off by keeping PSS at the forefront of distribution services.



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82 Set goals to spark action. An organization doesn't need to know exactly how it will reach a sustainability goal when it sets it. Often, achieving the goals requires a combination of both larger, more sweeping actions, and small, incremental steps.



83 Go straight to the top. As with any worthwhile undertaking, a commitment from leadership is critical. Leadership needs to understand the business case so they can dedicate resources and help determine goals and priorities that align with organizational targets.

84 It's a no-brainer. Simple and inexpensive changes can impact energy and cost savings. For example, the return on investment from switching to LED lights can be as quick as a year or two, and the result is a net-green positive on your supply chain.

85 Strive for diversity. Bring together employees from different departments to

allow for a range of expertise. Working with individuals from different departments also creates champions of sustainability initiatives across the organization.

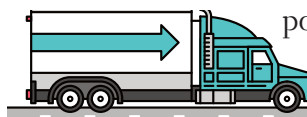
86 Pick the low-hanging fruit. Typically, inventory levels and placement are easy pickings. More product means more space, labor, equipment, waste, and energy consumption. Invest in a good warehouse management system or partner with a 3PL.

87 Establish a baseline and start measuring. Once companies identify the drivers of waste, they need to measure how much is

occurring. What percentage and what types of products are going to landfills or compost? Knowing that a particular product is being discarded at a higher rate than similar items can help identify actions to reduce waste and cut costs.

88 Walk through your supply chain operations from beginning to end. At each step, stop and ask why. Now, ask the same question four more times. The "Five Whys" technique is an effective tool to expose weaknesses and redundancies in your green supply chain.

89 Look back. Empty trucks returning to the point of origin chew up costs. Loading products onto those trucks means fewer trips and less wasted fuel. The first step is to look internally for products that can fill the trucks. If no options are available internally, many brokers can identify potential backhaul partners.



90 Get lean and mean. Implementing lean operations is the most strategic way to green your supply chain. From the CEO to the assembly line, every member of a lean organization relentlessly seeks out waste and eliminates it. If a system or process does not add value, lose it.

91 Eye up transportation. Companies often can reduce the amount of energy used to transport materials and products. Look at your network and how you can consolidate shipments to minimize the number of trucks.

92 Analyze warehouse design efficiency. A layout that reduces the number of times an item is handled and cuts the distance traveled between actions can reduce both labor and energy costs. An efficient layout allows many companies to work within a smaller facility, or avoid expanding.

93 Think outside the box. One large office equipment manufacturer with a closed-loop distribution network replaced cardboard packaging with collapsible, returnable plastic totes, diverting 300,000 large cardboard boxes from landfills annually.



For over 25 years, Polaris Transportation Group has been providing expedited overnight LTL cross border service between Canada and the USA. Over the past few years, Polaris has undergone a digital transformation by significantly investing in the development of next-generation platforms and applications.

Since embarking on this journey in 2017, they have seen incredible success in the technologies developed, integrated and implemented. This has greatly increased the efficiency of straight-through processing which has enhanced both the speed and quality of service for their customers and employees.

Polaris President and CEO Dave Cox explains, "We were looking to effectively eliminate paperwork and manual, repetitive labour wherever possible, throughout every division of our operation. When we started, we had a team reviewing, sorting, and proofing thousands of various shipping documents every single day. Through the development and implementation of robotic process automation systems, we are now able to automate 80% of this workload and allow our team to focus their efforts only on the exceptions which require human expertise."

Dave Brajkovich, Chief Technology Officer adds, "Where processing paperwork on the human level would take one to two minutes per, our AI is able to process in one to two seconds,

if not faster." Dave continues, "It's not just the speed that is so impressive but through machine learning, our systems are able to identify and correct errors on shipping documents which for our Customs department, has resulted in a 30-40% drop in customs clearance rejections.

“

Our investments into artificial intelligence and robotic process automation allows us to support fluid freight flow.

”

Dave Cox speaks to the enthusiasm surrounding this digital shift, "These advancements have been embraced with open arms by all parties. Our service continues to improve with instant ordering and processing, our employees are

being relieved from mundane or repetitive tasks, our freight is crossing the border without delay and clerical errors are reducing exponentially."

The advancement in technology also allowed Polaris to create a virtual work from home environment during this Pandemic. It allowed 85% of their team to work remotely and took less than 2 days to set-up their secure remote access from home in March when this crisis began.

GPS and geo-fencing technologies are in place providing critical insights to Polaris Planning and Dispatch departments. They have developed and implemented a fully integrated tracking system to completely automate the dispatch, asset allocation and routing for all shipments. Polaris is also preparing to contribute further advancements by establishing a fully digitized paperless environment. The goal is to facilitate the full electronic processing of cross border freight between Canada and the USA for shippers, consignees and brokers.

Mr. Cox states, "Polaris continues to invest into the development and implementation of these technologies to solve real-world problems in the transportation industry and related verticals. We are the proof that these technologies, when integrated properly, create remarkable efficiencies."

94 Plug in your operations.

Many service providers offer lease and maintenance options for alternative fuel vehicles and electric vehicles. Consider electrifying your fleet through a lease program to minimize risk and maximize efficiency.

95 Optimize packaging.

Experiment to identify products that can be safely shipped in smaller boxes or even envelopes.

96 Analyze returns.

Many companies can process returns more efficiently, and with less resource use, within a central returns location.

97 Focus on total lifecycle cost.

When purchasing green products and applying environmentally friendly processes, look not just at the purchase price, but also at the total cost of ownership. Consider the energy, water, and labor required to maintain, operate, clean, and dispose of an item, as well as the initial investment. Once you include these factors in the calculations, green products often become competitive.

98 Maintain focus.

It doesn't make sense to put off greening your supply chain. Nor does it make sense to work at it sporadically. Get engaged and keep a continual focus on your supply chain.

99 Do what's right.

When it's a toss-up, go green. Your customers will thank you.

**INVENTORY MANAGEMENT**

100 Examine key pain points. Excessive storage costs, low inventory turnover rates, and stock-outs can add up to substantial financial losses. Figure out how to avoid or mitigate pain points by using a flexible inventory management system.

101 Evaluate how long it takes your staff to manually check inventory. Reduce hours wasted on physical counts and lost to human error with a solution that can automatically track inventory from its point of origin to when it's in the hands of the end user.

103 Prepare for expansion. Select an inventory management solution that provides only what your company needs at the time to lower upfront investment and user training. However, the solution must be able to grow and evolve right along with you. Flexible platforms leave the door open for changes.

104 Determine your current solutions' limitations. Do you struggle with complicated, time-consuming inventory reconciliation processes? Do you constantly have to manually change inventory levels after physical counts to reflect

actual in-stock positions? If so, you're losing money and customers.

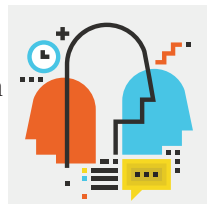
105 Decide what your company truly needs. Today's cloud-based software systems can be tailored to your exact needs, so think outside the box as to what your business needs.

106 Establish a unified inventory system for the entire team. With leading cloud inventory management software, information can be readily shared with all users and stakeholders in real time. That leads to better decision-making around purchasing and fulfillment and helps you come closer to striking the perfect inventory balance.

107 Walk, crawl, then run. Use a step-by-step approach during the software selection and implementation process to ensure you build your inventory management approach on a strong foundation and set that system (and company) up for future success.

102 Brainstorm with your entire team. Have a discussion with your sales and marketing teams, talk to your warehouse manager and run a few customer focus

groups to figure out where new opportunities exist. Collaborating with all these stakeholders will help you optimize inventory management in a way that allows you to better meet the needs of your business.



SELECTING A TRANSPORTATION MANAGEMENT SYSTEM (TMS)

108 Form a diverse selection committee.

Include finance, operations, and safety in the decision-making to make sure your huge investment works for the entire organization.

109 Select a forward-thinking and connected partner.

EDI is the past; APIs and blockchain are the future. Your provider must adapt quickly, embrace change and connect with third-party providers and their critical tools. If your provider is slow to integrate, you will lose ground to competitors.

110 Don't (necessarily) purchase the helpdesk.

Consider purchasing the helpdesk for the first year, but it may be less expensive to pay hourly. Price it out. Have

one or two super-users who can be the last line of defense before contacting the TMS provider and incurring billable hours.

111 Measure ROI on modules. Most systems offer a base package and a plethora of add-on modules. Start small then expand when you can fully utilize the extra power. Price the add-ons initially so you know your future expenditures. Ask for discounts if you purchase multiple packages.

113 Check references. You will get deeper insights from users than from the salesperson. Ask about pain points, missing features, and bugs or quirks. Talk to a few different areas at the company, not just IT.

114 Keep modifications in check. Modifications are expensive and you typically must pay to port them to each new upgrade. Purchase a TMS that you can use as is or modify your process to work with the TMS.

115 Invest in training. You can have the best tool, but unless your team knows how to utilize all the features, you are squandering your investment.

116 Think about all your modes. Consider truckload, LTL, air, and intermodal. Many TMS solutions work well in some modes; few work well in all. Make sure that the system you choose meets your core competencies and does not hamper future expansion.

112 Upgrade and expand regularly. Invest in your TMS as you would an employee. Budget annual recurring costs for upgrades and new modules. If you don't upgrade, you are falling behind your competition. Before you commit to a TMS provider, determine the typical upgrade and migration costs, and how long it takes to implement.



LEVERAGING THE INTERNET OF THINGS (IOT)

117 Monitor and track supplies accurately in real time. Supply chain visibility from end to end means things get done right the first time—and on time.

118 Improve customer expectations with real-time shipment updates.

Integrate IoT devices such as electronic logging devices,

GPS, and telematics into your logistics processes to track the status of trucks in the delivery cycle so you can easily update clients if a delivery will be delayed.

119 Analyze data regularly. The data collected from IoT devices helps you gain insights into carrier performance, lead times,

and other key performance indicators that enable continuous improvement.

120 Integrate information to optimize routes and consolidate loads.

Streamline logistics from dispatch through delivery by sending dispatch information directly to the truck. Drivers will know their next assignment without having to return to the office or home.

121 Minimize cargo theft.

Implementing tracking sensors on pallets, cartons, and trucks lets you know where items are at all times. If a truck goes missing, you can track its location and hopefully recover the items or deter the theft.

122 Streamline workflows and billing/payment. IoT devices can improve workflows by sending information directly to clients or management. You can digitally generate quotes, pay drivers, and invoice customers.

123 Ensure product quality. Use temperature gauges and other IoT devices to reduce spoilage and ensure that products arrive at their location in the best possible condition and quality.

124 Reduce human error. IoT lets you bypass manual entry, which is often fraught with human error. Fewer errors also means a reduction in wasted time and effort, which leads to cost savings.





125 Pay carriers quickly.

Carriers can decide who they want to do business with, so become a preferred shipper. Treat your carriers as partners and pay them quickly.

126 Evaluate changing regulations, guidance, and safety standards.

Good warehousing always includes understanding the rules by which you must operate—not just for compliance, but for the health of your employees and their families.

127 Know who you lost to layoff/furlough.

In most warehouses, especially smaller operations, reliable workers end up performing a lot of tasks. Sometimes, those tasks bind together or gloss over operating challenges. Evaluate your team, identify who is no longer there, and dig into their roles and responsibilities.

128 Expect shifting sands.

Leaders and managers should let returning staff

know that every day will be an adventure, and cultivate resiliency in their teams. Priorities and focus will shift, so the best guidance we can give our teams is to be open to change. Offer them confidence that you'll be right there with them.

129 Prioritize your operations.

Facilities may not have the staffing to support 10 number-one priorities, so be ready to communicate the risks to operations that move down the list. A common prioritization is picking, packing, receiving and put-away, and inventory control

130 Improve the customer experience with enhanced customer service.

Differentiate your organization by providing better on-time delivery, ensuring orders are delivered safely and efficiently. Proactively alert customers if there is a delay in a shipment.

activities (e.g., cycle counting, consolidation). The focus is on immediate fulfillment activities, then refilling the warehouse, and finally ensuring inventory validity. Allocate your resources to accomplish those goals in that order, be transparent on the costs of this type of focus, and be ready to adjust.

131 Stabilize your own suppliers.

As much trouble as you're having, imagine your own vendor's warehouses. Corrugated, cleaning/office supplies, and even availability of trailers or containers, are all affected by the same challenges you face. Check and verify. If new lead times are needed prior to placing orders, ensure you understand and communicate them.

132 Audit all freight invoice charges.

A high percentage of freight bills are incorrect, and if you don't review them, you are leaving money on the table.

133 Create a personnel plan.

Decisions around headcount can be difficult, but usually the need is apparent. It is a challenge to know who and how many to hire and when, so it is worth a strategy session with your leadership to understand the trigger points for

bringing on temporary or full-time employees.

134 Tighten up fulfillment accuracy.

If you're delivering into the retail channel or direct to consumers, take a fresh look at your shipping accuracy. Your business worked hard to earn that sale during a recession, and the costs to correct a mistake will only be amplified. Reducing errors will yield greater than normal benefits to your financial performance.

135 Set goals and give updates.

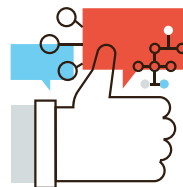
The workers you've managed to retain are probably the strongest employees you have. With that team, and in this environment, you might ask for better individual performances or facility goals than you've ever had. Use your strongest team to accomplish the most work.

136 Decide if it is time to invest.

Cloud-based warehouse management systems (WMS) find their value in letting you do more with less. Now is the time, as order volume and a recessed economy may create a window for this improvement.

137 Keep a keen eye on your goals.

Celebrate every win. Managers are under tremendous stress and every hourly employee is just as burdened. We have an opportunity to run warehouses tightly and professionally—and use every dollar and every man-hour to its fullest. ■





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11

SUPPLY CHAIN PREDICTIONS FOR 2021

WE GOT THROUGH 2020 WITH CREATIVE PIVOTS AND OPERATIONAL ADJUSTMENTS. IN 2021, MANY SUPPLY CHAIN CHALLENGES WILL PERSIST—FROM CAPACITY CONSTRAINTS TO INCREASING COMPLEXITY. THE PROGNOSIS? A YEAR AHEAD WITH AMPLE OPPORTUNITIES FOR ADDRESSING INEFFICIENCIES WITH RENEWED CREATIVITY AND DIGITAL DIRECTIVES. EXPERTS WEIGH IN ON 11 PROGNOSTICATIONS.

TRANSPORTATION

CAPACITY REMAINS TIGHT



With unemployment numbers trending downward and COVID-19 vaccines shipping, truck freight will experience significant growth on the supply side in 2021. With an overall driver shortage expected to continue, recruiting drivers will be a major challenge for trucking companies throughout the United States.

These trucking companies will need to place emphasis on technology solutions, operational improvements, and branding campaigns to recruit drivers in what will continue to be an industry-wide battle for capacity.

This shortage in capacity raises a bigger question: How can companies in the space work together—or autonomously—to make the truck driving profession a more attractive career choice? More importantly, how can companies make truck driving a more enjoyable, rewarding, and financially reliable profession while removing the pains frequently associated with the career?

There is a huge opportunity for companies to make the profession more attractive for younger generations.

ROY ROSELL

Head, Product Marketing, NEXT Trucking

As COVID-19 continues to impact people throughout the world and the United States, its effect on consumer behaviors is forcing companies to rethink their inventories, create supply chain flexibility, and consider more elastic pricing constructs for their transportation in 2021.

In 2020, we went through an 18-month freight cycle in just a few months, which no one could have predicted. This year, we will continue to see tightness in the market due to COVID-19.

Transportation makes up approximately 10% of GDP. With many consumers not traveling, going out, or spending money on things they typically do, they are buying more products. This bodes well for the transportation industry as well as manufacturers, distributors, and retailers.

Another factor that could impact capacity is the possibility of extreme weather throughout the year, which can further change market conditions. In addition, we saw some carriers close, go out of business, or downsize in 2020, which has put some pressure on the market.

DOUG WAGGONER

Chairman of the Board of Directors and CEO
Echo Global Logistics

The global shipping meltdown of congestion, backed-up ports, and cargo trapped in factories without containers or vessels to ship the goods to buyers in overseas markets was a full-fledged conflagration in late 2020. This is expected to remain until Lunar New Year in February 2021.

Regardless of origin and destination points, the container imbalance will persist well into 2021. Chinese container factories cannot manufacture their way out of this imbalance for the country's exports and the number of containers terminated at ports of arrival translates into zero available equipment for inland exporters for agricultural and manufactured goods, regardless of destination.

Carriers who have profited handsomely from soaring rates in 2020 will need to ask whether or not such sky-high levels can remain in 2021 and from what part of their profits the cost to reposition containers globally will come—and shippers and forwarders alike will strongly voice their opposition to being the financial vehicle to foot the endeavor.

MIKE KLAGE

Solutions Director
TOC Logistics



Keeping workers safe will top priority lists. While companies have already adapted to the social distancing and sanitizing protocols necessary to keep workers safe, they will also place a greater emphasis on traditional workplace safety concerns, like those involving ergonomic and repetitive stress issues, and other potential injuries that may be caused by working with equipment and pallets.

Amazon hired hundreds of thousands of workers in 2020, an average of more than 2,800 per day between July and December, and both UPS and FedEx staffed up as shipments soared over the holidays. Many of these new workers had been impacted by unemployment spikes in other sectors, such as retail and hospitality.

Although these companies have strong training and safety programs,

many workers with less experience in physically demanding supply chain environments will inevitably face challenges.

JEFF PEPPERWORTH
President and CEO
iGPS Logistics

Empowering the Warehouse Workforce

Businesses will invest more in solutions to support automation and next-generation technologies in the warehouse. One factor is a changing workforce: Be it materials handling equipment, robotics, or voice, vision, and mobility solutions, businesses must be prepared to augment and empower the workforce.

This is to handle potential labor shortages or an influx of new employees without prior warehousing experience from industries affected by the pandemic.

SEAN ELLIOTT
Chief Technology Officer
Körber Supply Chain Software

“We will continue to see the growing adoption of hybrid automation for some time. This is the utilization of both workers and robots—or the use of collaborative robots—for the majority of workflows.”

TOM BIANCULLI
Chief Technology Officer
Zebra Technologies

An Assist from AI

In 2021, we’ll see manufacturers, logistics companies, and other human-workforce-heavy industries turn to artificial intelligence to speed the adoption of technologies aimed at assisting humans in their tasks.

I predict quality inspection, already in the top 5 applications for AI in manufacturing, will see even greater adoption and widespread deployment.

We’ll see AI deployed in the form of inexpensive and lightweight hardware. The economic outlook is such that capital-intensive, complex solutions will be sidestepped for lighter-weight, perhaps software-only, less expensive solutions. This will allow manufacturers to realize ROIs in the short term without massive up-front investments.

It will also give them the flexibility to respond to supply and demand fluctuations—something that we’ve seen play out on a larger scale throughout the pandemic.

Humans will turn their attention to “why” AI makes the decisions it makes. When

ROLE RESET

Supply chain organizations will undergo a revamp. As businesses find efficiencies and adopt new supply chain software technologies to boost resilience and competitiveness, including greater workflow automation and new AI capabilities around prescriptive analytics and autonomous agents, these new technologies will essentially remove dozens of roles across the organization through technology leverage. Decision making will become far more data driven, AI-assisted, and automated—rather than through tribal knowledge.

JOE BELLINI
COO, One Network

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we think about explaining AI, it has often been talked about in the context of bias and other ethical challenges. But as AI comes of age, gets more precise and reliable, and finds more applications in real-world scenarios, we'll see people start to question the "why?"

The reason? Trust. Humans are reluctant to give power to automatic systems they do not fully understand. For instance, in manufacturing settings, AI will need to not only be accurate, but also "explain" why a product was classified as "normal" or "defective," so that human operators can develop confidence and trust in the system and let it do its job.

DR. MAX VERSACE, PhD
CEO and Co-founder
Neurala

Spotlight on Worker Health and Wellness

COVID-19 has spotlighted the need for the warehousing industry to focus on the health and wellness of workers. Workers who helped move food, personal protective equipment, and supplies to the public are essential, and companies will continue to innovate in this area.

Improving efficiency—for example, updating and streamlining processes—and exploring new technology—such as robots, exoskeletons, and wearables—will serve as ways industry can continue to keep workers healthy and optimize their workflow.

GABE GRIFONI
Founder and CEO
Rufus Labs

DISRUPTION WILL BE A CONSTANT



Disruptive natural disasters continue to significantly impact business operations, worker safety, and transportation. In the western United States, close to 3 million more acres of forest were burned over 2020 due to wildfires in California alone, causing significant business operations and environmental impacts.

Similarly, the Australian continent experienced severe wildfire outbreaks. Additionally, flooding presented a persistent threat in Southeast Asia throughout the year.

With persistent dry conditions in the western United States and Australia and prolonged monsoon seasons in Southeast Asia, as well as a record number of named storms in the Atlantic and Gulf of Mexico, there will likely be continued disruptive natural disasters complicating business operations in 2021.

Additionally, regulatory changes focused on eradicating threats to sustainability, human rights, smuggling, and other issues from business operations will play a large role in 2021. Due to trending issues in human rights violations across the globe, with forced and child labor contributing to a large part of the workforce, regulatory bodies are focusing efforts on imposing sanctions and other standards.

JIM YARBROUGH
Global Intelligence Program Manager
BSI

Supply chain disruptions are common and the rate of disruption seems to be increasing. Weather events, tariffs, labor strikes, manufacturing issues, and more happen all the time—the pandemic being the largest in modern history.

Businesses must be flexible enough to respond quickly when disruptions occur. A fixed logistics model is not designed to be flexible or fast.

The rise of e-commerce and omnichannel retail presents another type of variability: fast change and ongoing uncertainty. Consumer expectations around shipping speeds and costs changed significantly and are still in flux. Making multi-year investments in the face of this uncertainty is highly problematic.

Flexible logistics models, which complement fixed logistics infrastructure with flexibility, will enable resilience. They support variability and uncertainty from supply chain disruptions of all shapes and sizes from high-growth environments to fast-changing consumer preferences.

The combination of fixed and flexible logistics will enable retailers and CPG brands to be efficient, responsive, and resilient.

KARL SIEBRECHT
Co-Founder and CEO
FLEXE



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COLD CHAIN HEATS UP

With vaccines front-and-center, the cold chain will take on new importance in 2021.

Supply chain is hard enough, but keeping the entire chain continuously temperature controlled and refrigerated is much more challenging. Yet, that's required for many temperature-sensitive products, including vaccines, medicines, foods, and even chemical products.

Companies need full monitoring, track-and-trace, chain-of-custody, and point-of-origin information across all sites and multiple parties—a challenging task, yet essential for these critical products.

In 2021, business network platforms with these capabilities will increasingly become “must haves” for firms that handle such product movements and are charged with monitoring from order to delivery, across all tiers of supply and distribution, to ensure product requirements are met and remain in compliance.

The good news is that by adopting this technology they will help suppliers, manufacturers, and logistics providers too, as all parties can lower costs and boost service levels by managing resources across storage and multi-modal movements throughout the cold chain.

JOE BELLINI
COO
One Network

A Push for Refrigerated Temperatures

The number of viable, approved COVID-19 vaccines will continue to grow in 2021. All else equal, it is likely the market will favor vaccines that require refrigerated temperatures of 2-8 degrees Celsius (35 to 46 degrees Fahrenheit).

Existing infrastructure exists to more easily transport and store these vaccines around the world. Additionally, refrigerated temperatures eliminate concerns around shortages of dry ice and how it reduces the amount of available cargo space on aircraft.

This preference for refrigerated vaccines could push pharmaceutical companies with deep frozen vaccines to determine how to maintain efficacy of the vaccine at a refrigerated temperature.

DAVE WILLIAMS
President
Pelican BioThermal,
a division of Pelican Products



SUPPLY CHAIN COMPLEXITY INCREASES

Businesses that relied on single-source suppliers for key components will look to spread the risk over multiple suppliers in different locations. That adds cost to the product since you're transforming business models away from simple bulk purchasing.

There's also a knock-on effect in terms of how products are designed and built. For example, companies may need to be able to accommodate variations in terms of the sub-components they use from a variety of suppliers, which adds an element of complexity.

MIKKEL HIPPE BRUN
Co-founder and Senior Vice President, APAC
Tradeshift

Pandemic-Driven Shifts Add Complications

Early in the pandemic, companies sought suppliers and manufacturing capacity elsewhere—moving from China to Vietnam, for example. The challenge with this is every other company was doing the same thing.

However, Vietnamese ports are not designed to handle the volume of their Chinese counterparts. This actually increases complexity and, therefore, risk. Companies will need to tackle these massive shifts

and resulting complexities in 2021.

Additionally, supply chain's white whale—the last mile—grows even more complex. The last mile has always been the most expensive, long-bemoaned challenge of the supply chain.

The “homebody economy” created by the pandemic means more of everything—from hot food to furniture—is being ordered online for delivery, including things that are harder to deliver.

CHRISTIAN PILLER
Vice President
project44



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E-COMMERCE

REDEFINED



One thing is clear: The future of e-commerce has arrived. The acceleration of e-commerce will be defined by three factors in 2021 and beyond:

1. Shoppers. The constantly lowering tolerance threshold of shoppers is same-day, and it is headed toward one- to two-hour delivery windows. Research shows that what will keep people shopping online in the long term is not safety, but convenience.

2. Stores. Will the rise of digital commerce mean the end for physical retailers? The data says no. Adobe reports more than half of online shoppers prefer retailers that have both physical and online stores. What will define the future of stores is the experience.

Brands need to take the

lessons they've implemented in their e-commerce environments and bring them into the retail space.

The future of malls, for example, could be “dark stores” (fulfillment engines for retailers’ e-commerce sales) and branded experiences like pop-up shops, which draw inquisitive traffic out of their homes and into the shopping environment.

Post-COVID, retailers will have to consider

how to make the in-store shopping experience feel innovative and fresh, but also comfortable and safe.

3. Supply chains.

Creating a true omnichannel fulfillment infrastructure will prove critical to ensuring efficiencies in the supply chain that supports brick-and-mortar, click-and-collect, and home delivery.

Margin pressures have made automation a requirement, not a choice. Unable to pass costs on to their customers in this hypercompetitive environment, retailers will need automation to support and bolster margins.

The future of supply chain automation will include more solutions that span the supply chain ecosystem, connecting supply, demand, inventory optimization, fulfillment optimization, and so on. Warehouse automation solutions will depend on software to provide the flexibility to handle fluctuations in demand.

HASAN DANDASHLY
President & CEO, Dematic

“Distribution centers and transportation hubs will move closer to key retail partners to speed shipping, enable better real-time tracking and logistics optimization, and meet customer expectations for efficiency.”

ABE ESHKENAZI, CSCP, CPA, CAE
CEO, Association for Supply Chain Management (ASCM)

Tracking Gets Traction

The acceleration of e-commerce buying behaviors spurred by the pandemic will necessitate soft asset tracking and a new digital standard to enable more agile supply chain operations.

The e-commerce boom has completely changed last-mile distribution and how products are distributed to customers. The sudden increase in online shoppers will fuel the need for supply chain entities to adopt new digital touchpoints to help deliver products both safely and efficiently.

In 2021, last-mile distribution will see larger retail sellers move from operating through large distribution centers to utilizing stores as drop-off points and leveraging them as micro warehouses to complete microfulfillment operations.

However, unlike distribution centers, stores are not equipped with the necessary software to track assets, which is vital

SECTORS ON THE RISE

Prepare for a new e-commerce. We can expect expansion in realms such as food and home materials to continue in e-commerce. Online grocery shopping, curbside delivery, dark kitchens, and microfulfillment centers have become and will continue to be a norm. Key to this is a warehouse management system to properly manage goods.

SEAN ELLIOTT
Chief Technology Officer, Körber Supply Chain Software



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for products that require cold chain storage, such as grocery items.

In 2021, supply chain organizations will require continuous, real-time visibility to gain access to valuable insights—such as the location, environmental conditions, and temperature of products—in order to optimize inventory, planning, and logistics, as well as keep up with ever-increasing e-commerce demands and mitigate risk.

MAHESH VEERINA
CEO, Cloudleaf

FedEx in a Prime Position

In 2019, FedEx made the seemingly bold decision not to renew its contract with Amazon and seek volume elsewhere instead of continuing to take the virtually guaranteed growth of the behemoth.

Turns out, FedEx made a wise decision because Amazon had been filling more and more FedEx equipment with lower margin packages. When the pandemic created a serious acceleration in e-commerce, FedEx showed it could find other shippers that would pay more per cubic foot.

In 2021, FedEx will refine its current products and services and build new ones that meet the needs of a broader swath of e-commerce shippers that may not have the financial, supply chain, or technology resources of Amazon.

CHRISTIAN PILLER
Vice President
project44

COLLABORATION IS KEY

Transparency and trust will need to be present in global supply chain management. The future of the industry will begin with partners and their APIs that will help improve the sourcing ecosystem.

It's not about developing your own, but rather collaborating with experts including trade insurance specialists, freight solutions providers, 3PLs, recommendation engines, etc.

MINESH PORE
Co-founder and CEO, BuyHive

All About Networking

Supply chains are out. Supply networks are in. In 2021, companies will focus on strengthening their business networks after seeing firsthand the importance of supplier, co-manufacturer, customer, carrier, and distributor collaboration.

In 2020, companies discovered their legacy enterprise-centric systems no longer were good enough so in 2021 they'll look to modern technology approaches to support tight collaboration around plans, forecasts, orders, shipments, ETAs, and inventories in real time.

Multi-enterprise business networks support collaboration and provide real-time information flows, thus reducing errors and inefficiencies. This allows all sides to work together to satisfy consumer demand at the lowest landed cost and improve

"To remain competitive, manufacturers need to shift from the traditional linear contracts in the supply chain to multi-party collaborative partners with greater focus on services the end customer demands. This will help all parties better manage capital while also offering creative solutions to customer needs."

VENKAT ESWARA
VP, Product Marketing, Synchron

their competitiveness. It also provides the ability to on-board suppliers more quickly, as needed to avoid any disruption in supply.

Whether 5 or 105, almost every company runs separate ERP systems to support the business. The massive inefficiencies of these self-imposed business barriers have come to light, and firms recognize they need to be eliminated.

These silos have artificially propped up costly inventory buffers, as companies carry the burden of excess inventory, information delays, and the enormous IT costs of interfaces, maintenance, and upgrades.

Most supply chain professionals inherited this problem, rather than caused it—and now they are desperately trying to fix it.

Moving supply chain processes onto a collaborative business network platform cuts across all these silos and enables a focus on generating value at each step along the way. It's the only option for large enterprises saddled with stitched-together legacy systems. In 2021 more global enterprises will see network solutions as the only viable way to pave a profitable path going forward.

JOE BELLINI
COO, One Network





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INCREASED FOCUS ON BUILDING **RESILIENCE**

If 2020 taught us anything, it demonstrated that to maximize resilience and ensure business continuity, companies need to utilize every available channel—e-commerce, direct-to-consumer, retail, distributors, and Amazon. That way, if one channel is disrupted, whether by natural or man-made causes, the show will go on.

In 2021, companies will need to rely even more on supply chain networks to consolidate demand across every channel, and have a view into every point of supply (even containers on ships) to be able to satisfy customer demand, grow revenues, and minimize costs.

Well before 2020, manufacturers, consumer goods companies, and even food producers were already

We can anticipate predictive analytics to help create a more resilient supply chain in combination with a robust carrier portfolio that will enable prompt response to changes, allowing for better planning and forecasting.

GUIDO GRIES

Managing Director, Air & Sea Logistics Americas, Dachser

trying to sell directly to the end consumer. Those who have yet to figure out how to maximize this channel find themselves falling behind their peers.

What early adopters learned was the need to determine “lot size 1” production and delivery, the needed last-mile logistics, a returns process, and e-commerce technology capable of handling the proliferation of choice and SKUs customers demand.

JOE BELLINI

COO, One Network

Resiliency Supports Risk Prevention

The pandemic demonstrated to the world how important resiliency is in the supply chain. Supply chains are complex, global, and increasingly interconnected. When one part of the network is exposed to risk, the rest is vulnerable to disruption.

Consultancy firm McKinsey & Company published a report in 2020 detailing the exact steps that supply chains need to take in order to rebound from the uncertainty of the pandemic and come back stronger, including estimating available inventory to account for a major supply disruption and assessing realistic final-customer demand during the production phases.

In 2021, companies in the supply chain will need to focus on resiliency, in conjunction with risk prevention, to mitigate adverse events faster than the competition, take market share, and outperform.

ABE ESHKENAZI, CSCP, CPA, CAE

CEO, Association for Supply Chain Management (ASCM)



HIGH-VALUE GOODS

WILL BE TARGETED

The pandemic added new and complicated threats to pre-existing supply chain risks. With lockdowns, diminished supplies, and transportation restrictions, drug introduction and smuggling trends shifted. As a result, cargo theft trends changed to focus on newly high-valued targets and locations.

Shifting drug smuggling trends in the Americas will create challenges for operators in port security and other drug introduction points to cargo across the globe.

Additionally, as business operations slowed during COVID-19, cargo criminals shifted operations to target high-value supplies, including medical equipment and warehouse and facility locations for theft. Criminals will likely continue to target high-value commodities, and warehouses and facilities, especially if lockdowns continue to occur globally.

JIM YARBROUGH

Global Intelligence Program Manager, BSI





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The pandemic highlights the increased need for digital transformation within the industry, as vaccine distribution wouldn't have been possible without technology such as IIoT sensors to monitor temperature or provide real-time insight into location.

As distribution of the COVID vaccine continues in 2021 and is top of mind for people across the country, we'll see companies make substantive updates to their technology capabilities to improve agility across the supply chain. The vaccine marks a potentially defining moment with such high, mainstream visibility into our industry.

Getting the vaccine quickly shipped and distributed to high-risk populations, and doing it well, will be a proof point of what can be done with an agile supply chain.

In 2021, we'll also see a push behind guaranteeing the chain of custody to ensure genuine products versus counterfeit products in the marketplace. We'll see IoT and technology like blockchain combined for end-to-end counterfeit assurance, to ensure everything from vaccines to retail products are authentic and safe.

SEAN RILEY
Sr. Global Industry Director
Software AG

"Three digital technologies will move the needle for the industry: data science, blockchain, and omnichannel distribution strategies."

CHRISTIAN PILLER
VP, project44

ACTIONABLE DATA HOLDS THE KEY

"Data, collected in real time, allows shippers to excel amid the unknowable challenges of the next few years. Stakeholders will benefit from supply chain technology that allows them to quickly react to growing adversity. Shippers need digitally empowered operating platforms that leverage data to efficiently make informed decisions."

PERVINDER JOHAR
CEO, Blume Global

Developing a Complete View of the Product Journey

Technology advances like digital twins, AI/ML, and IoT enable more granular tracking and impact the end-consumer experience.

Today, IoT is a ubiquitous technology for supply chain tracking. Applications for AI/ML and digital twin technology have also risen in relevance for the industry.

In 2021, companies will start to employ a concerted strategy around these technologies to construct a complete and real-time picture of products as they move through the supply chain, as well as to obtain prescriptive and predictive analytics to make informed business decisions.

In this strategy shift, we will see the gaps of visibility close where the supply chain has remained most weakened even with the use

of IoT alone, such as in low coverage areas when product is in flight, adding critical value to pharmaceutical and food supply chains, which lose billions annually in spoiled products.

Additionally, we can expect to see this visibility get even stronger as 5G takes complete shape most likely in 2022, offering more connection and even more to-the-minute information.

Companies often experience a mess of silos and fragmentation due to being acquired by large companies that have different systems. In 2021, supply chain stakeholders will look to deploy digital twins across all modules as an extra layer of visibility and to ensure synchronization between a existing systems and new technology, such as sensors and nanosensors, which are coming to market in increasingly larger volumes.

MAHESH VEERINA
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"A circular economy is an economic model that encourages continuous reuse of materials to minimize waste, as well as drives demand for natural resource consumption. This concept requires a complete shift in how we view supply chains, from a linear to a circular model, as companies will need to be able to access and reprocess end-of-life products. Companies such as Maersk and Caterpillar are already developing circular economy initiatives and in 2021 we predict many more will begin exploring this concept."

ANTONY LOVELL
VP of Applications
Vuealta

Adaptive Sourcing

Rate changes, re-negotiations, and reactive spot bidding are occurring with greater frequency and urgency for many companies. It reveals the need for sourcing teams to rapidly adapt.

Carrier and supplier decisions increasingly involve factoring in sustainability and environmental impact, such as CO2 emissions. Prioritizing climate impact requires analyzing that data in relation to other business operation needs and costs to find the optimal sourcing outcome.

Logistics procurement professionals need more assistance from their software solutions to support these heightened demands.

ALAN HOLLAND
CEO and Founder, Keelvar, Inc.

Sustainability in the Resilience Equation

Issues of sustainability in supply chains will play an increased role in how

companies operate as governments and regulatory bodies crack down on companies, creating an environment where vetting suppliers and understanding each level of the supply chain is crucial for a resilient organization.

As industry leaders contend with these challenges in 2021, leveraging supplier management and risk intelligence platforms will allow them to understand and proactively manage risk.

JIM YARBROUGH
Global Intelligence Program
Manager, BSI

Supply Chain Traceability Becomes a Necessity

Tracing chain of custody of materials throughout the supply chain identifies the digital thread for every product and creates a compliance certificate that summarizes each exchange of products and materials from origin to final destination.

This is one option that

importers can submit as proof of admissibility and will become critical in the coming months.

Traceability and transparency will continue to gain momentum in 2021. One technology that can help solve this challenge is blockchain.

A blockchain network can track materials and products from source to end customer and, ultimately, the consumer. As more business partners join the blockchain platform, they provide a new level of visibility and connectivity across the supply chain.

The next phase of traceability is assessing the environmental impact of companies' supply chains, from component origin to final delivery to the consumer.

Every facility and supplier in the supply network will be

evaluated on criteria such as greenhouse gas emissions, use of renewable energy, waste disposal methods, and water consumption. Retailers will prioritize investing in sustainability tools as consumers demand this from their favorite brands.

MARK BURSTEIN
President and Chief Strategy
Officer, NGC

"Coming out of the pandemic, businesses of all sizes will face pressure to commit to greater transparency across value chains by publicly disclosing sustainability data that allow stakeholders to hold them accountable for performance. The only way to gain sufficient visibility over supply chains to meet these obligations is through digitization."

RAPHAEL BRES
Chief Product Officer
Tradeshift



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3PL Warehousing Gets In the Zone



By working as partners, third-party logistics providers and shippers take on today's warehousing challenges. BY KAREN KROLL

Like most business, shippers and logistics providers confronted new challenges in 2020. “I call 2020 the ‘Disruption Decade,’” says Jim Tompkins, founder and chair of logistics consulting firm Tompkins International.

Among other changes, COVID-19 altered supply chains and prompted a massive shift to e-commerce. Coupled with the accelerated delivery of online orders, these changes have led to spikes in distributed logistics, direct-to-consumer order picking, and outsourcing.

The tight market for warehouse workers presents additional challenges, says John Kettman, senior vice president of distribution and operations with Kane Logistics. One driver behind this trend is Amazon, which is scattering warehouses and distribution centers across the United States and offering top wages to attract employees.

While the largest retailers can typically afford the technology investments that will enable them to respond effectively to these shifts, many smaller companies are limited by their budgets. So, they’ll turn to third-party logistics (3PL) providers, says Christine Feuell, chief commercial officer with Honeywell Intelligrated.

In turn, 3PLs have been upgrading their material handling equipment so they can work more efficiently, Feuell says. Some are deploying autonomous mobile robots that can quickly move goods around a warehouse. Others are installing conveyors that speed workflows or implementing tools like voice-guided work.

With these investments and by working as partners, logistics providers can help shippers tackle today’s warehousing challenges.

Here is a look at several successful partnerships between shippers and their 3PLs.



Because FMB’s products are critical and installed underground or in hard-to-reach areas, all are manufactured to tight tolerances and then packaged according to exacting standards.

FORD METER BOX & PEGASUS: Going with the Flows

As a water system superintendent in the 1890s, Edwin Ford, founder of The Ford Meter Box Company (FMB), encountered shortages caused by customers’ excessive and unmetered water usage.

While meters were available, none were practical in the winter. So, Ford designed a meter box for in-ground settings. From that start, FMB, based in Wabash, Indiana, has grown to 30,000 products that help bring clean water to homes and businesses in 120 countries.

During the past 10 years, FMB, like many other companies, has seen delivery times accelerate. “When housing started to recover, our customers carried less inventory and wanted quicker, more frequent deliveries,” says Christopher Shanks, senior vice president and general manager.

To accommodate these requirements, FMB began placing distribution centers in key markets. In Dallas, it also partnered with a 3PL provider. That company turned out to not be a good fit. Within six months, FMB began looking for a new partner.

Shanks and his colleagues then turned to Pegasus Logistics. The partnership got off to a rapid start: Within three days, Pegasus helped FMB move 12 truckloads of more than 100 SKUs to a new warehouse and begin shipping products.

Given the criticality of FMB’s products and the fact that they’re installed underground or in hard-to-reach areas, all are manufactured to tight tolerances and then packaged according to exacting standards. For instance, a part that’s accidentally dropped may appear unharmed, but even a

tiny nick would keep it from meeting FMB’s standards.

The Pegasus team understands this. “Their pride in ownership is tangible,” Shanks says. To meet tight delivery times and continually monitor inventory levels, Pegasus operates with FMB’s warehouse management system.

Several attributes have been essential to this successful partnership. One is FMB’s commitment to it, as seen in the training they’ve provided Pegasus employees working on the account, says Dennis Stanley, vice president, business development with Pegasus. This was particularly critical, given the rapid launch to the partnership.

The open communication between FMB and Pegasus “makes it a real partnership,” Shanks says.

WHIRLPOOL & KENCO: Cleaning Up with Top Tier Technology

Housing the dishwashers, refrigerators, and other appliances Whirlpool Corporation produces requires mammoth facilities. The company's five regional distribution centers across North America span 4.5 million square feet.

In addition, until recently, many processes in its Canadian warehouse were paper-based. "Big space, distance, and paper all equals time," says Brian Tomchick, senior manager of operations for Whirlpool. "And time equals money."

Tomchick sought to implement a warehouse management system (WMS) that would allow his team to quickly and accurately process and record orders. "When a refrigerator goes, there's no time to waste with a slow supply chain," he notes.

While the WMS market features many solid solutions, many are geared toward consumer packaged goods. Because nothing off the shelf

Montgomery and her team explored several options. RFID technology would help address Whirlpool's challenges, but at significant cost. Drone technology wasn't mature enough to be a viable solution.

Then, Kenco discovered a company whose technology monitored patients in hospital beds. If patients moved more than one inch or so, it likely meant they had fallen, and the system notified the hospital staff. Montgomery and her team reasoned the technology could potentially track appliances digitally around a warehouse.

Whirlpool decided the potential benefits were worth deploying the technology in a new setting. As Tomchick and his team adapted the solution to their warehouse, they incorporated insight from the company's most productive operators into the solution.

For instance, an operator unloading a truck occasionally comes across

they need to move multiple appliances, cutting travel time by about 80%, Tomchick says.

In addition, tablets located on materials handling equipment replaced manual processes. To ensure an intuitive interface, Tomchick and his team engaged end users during the design.

In contrast to many implementations, productivity didn't dip and then rebound. Instead, it improved from the start.

The Whirlpool distribution center had been operating at world-class levels, making it difficult to improve productivity.

However, it has seen a 10% increase with the new system. "To get 10% on top of world class is outstanding," Tomchick says. He adds that Kenco has been great at taking feedback and finding the best path forward.

Whirlpool continues to strive for improvement. Among other initiatives, the team plans to automate the scanning of product serial numbers and automatically route incoming trucks to the door, which will be most efficient for unloading.

"There's a whole new level of efficiencies to explore," Tomchick says.

Whirlpool's 3PL replaced manual processes by implementing tablets on materials handling equipment.



"When a refrigerator goes, there's no time to waste with a slow supply chain."

- Brian Tomchick, senior manager of operations, Whirlpool

satisfied Whirlpool's needs, Tomchick turned to Kenco Group, a logistics provider.

The two firms had worked together on multiple projects. Moreover, Kenco boasts a dedicated innovation team that continually watches for emerging technologies, says Kristi Montgomery, vice president of innovation with the Chattanooga, Tennessee-based company.

a package or product that's damaged. Initially, the plan was for the operator to immediately bring the item to a repair area. In a large warehouse, however, that location can be far away.

Instead, experienced operators wait until they have about six items and then move them all to the repair area. The solution allows operators to wait until



FDF & DACHSER: Growing a Ripe Partnership

During the past few years, product volume for FDF Latin America, which provides air- and freeze-dried fruits, vegetables, spices, and other specialties, has increased about 30%.

To support FDF's growth, logistics provider Dachser Group SE & Co. helped the company move from a 328-square-foot warehouse to a food-grade space in Querétaro, Mexico, that provides between 3,280 and 4,921 square feet, depending on the season. "As FDF gains business, we're ready," says Edgardo Hamon, managing director, Dachser Mexico.

Among the range of warehouse operations Dachser manages are master data and inventory management, and applications that improve FDF's dock and yard management and returns processes.

To ensure the quality of FDF's products, Dachser conducts quality checks and sampling tests. Its color-coding system provides a quick way to distinguish between various types of products. "We provide an entire supply chain solution," Hamon says. "We keep the products safe and ensure they're at the right place at the right moment."

"The Dachser warehouse staff has adapted their system to our needs," adds Ivis Santiago, FDF's operations regional coordinator.

Among other changes, Dachser increased the frequency of shipments from twice weekly to daily. And while sanitation and ventilation have always been critical in working with food items, the Dachser team has followed strict protocols to minimize risks during the pandemic.

OLLY & RJW LOGISTICS GROUP: Getting in Shape for Walmart

Olly, a San Francisco-based provider of vitamins and supplements, had launched in several retailers, and was about to roll out its products with Walmart. In addition to being one of the world's largest retailers, Walmart holds strict standards and exacting delivery requirements.

That's when Michael Markowski, director of customer service and logistics for Olly, looked for a 3PL that could

system with an inventory tracking solution that ensures Olly can offer real-time inventory analysis. This data allows Olly to reduce inventory and safety stock, while maintaining best-in-class on-time and in-full (OTIF) metrics.

"We have reduced lead times to retailer distribution centers and simplified inventory replenishment," Markowski says.

Heading into the fourth quarter of 2020, Olly turned to RJW

to assemble more than 7,000 end cap displays.

By working with RJW, Olly has been

able to meet Walmart's delivery and other standards, which helped drive a doubling of sales between 2019 and 2020.

RJW's strategic focus on the "middle mile," or the trip segment from a point of origin—like a factory to a fulfillment center—optimizes processes, and provides the ability to quickly pivot and make better decisions. "This allows Olly to focus on what we do best," adds Markowski.

Working with a 3PL enabled Olly to meet Walmart's strict standards and delivery requirements, driving a doubling of sales.

support the launch and the company's growth, while also providing best-in-class customer service, logistics, and warehousing at a reasonable cost.

RJW Logistics Group, which specializes in retail logistics, fit the bill. Each Olly warehouse now integrates with RJW's logistics, trucking, and other value-add services.

For instance, RJW has deployed a Tier 1 warehouse management



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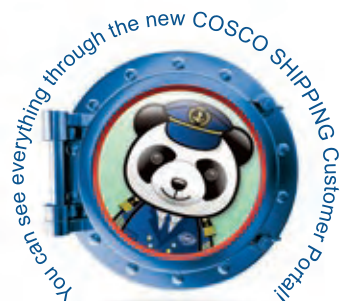
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TRAEGER GRILLS & KANE LOGISTICS: Meating Smoking Growth

While sales of Traeger Grills have been growing for years, online orders exploded in 2020. “With the pandemic, our online business boomed,” says Michael Davis, director of logistics and distribution with the Salt Lake City firm.

At the same time, the pandemic limited Traeger’s ability to hire temporary workers to help meet the jump in demand.

Traeger worked with 3PL provider Kane Logistics to accommodate the rise in business-to-consumer orders. In one step, the two companies worked together to automate bills of lading.

“Now when drivers show up, they don’t have 40 pages of bills of lading,” Davis says. “They know what shipments they’re picking up and can just grab a trailer and go.”

Not content to stop there, Traeger plans to soon eliminate bills of lading. Instead, drivers will scan a manifest to identify the correct pallet. The company has successfully tested this process and found it allows trailers to move more efficiently.

To help Traeger respond to growth in its direct-to-consumer business, Kane

warehouse to print labels.

Just as important as these changes is the quick, thorough action Kane has taken throughout the pandemic to ensure all employees’ safety. This allowed Traeger to make it through the busy season while avoiding shutdowns.

Also key is Kane’s ability to regularly

To help Traeger Grills meet booming online orders, its 3PL scrutinized warehouse processes to identify efficiencies.

engineers scrutinized the company’s warehouse processes, looking for efficiencies.

For example, Kane helped Traeger reposition fast-moving units closer to the pick-pack stations. The 3PL outfitted warehouse operators with tablets that print wirelessly, minimizing the distances workers must travel throughout the

offer ideas and then act on continuous improvement projects.

“Some bigger 3PLs are slower to move,” Davis says. In contrast, Kane—like Traeger—has demonstrated responsiveness and flexibility amid growth in 2020. These qualities will be key, given Traeger’s forecasts of another year of double-digit sales increases.



WAREHOUSING’S FUTURE: HANG ON TO YOUR HATS

While the challenges imposed by the pandemic will, we all hope, recede in the coming year, several other trends promise to influence the warehousing sector going forward, says Jim Tompkins, founder and chairman of Tompkins International.

One trend is increasing automation, driven largely by the difficulty of finding labor to meet the increasing level of direct-to-consumer picking required.

To justify the investments required to automate, contracts between 3PLs and their clients will extend for longer time periods, Tompkins says. At the same time, 3PLs will need to be more flexible in offering warehousing on demand, along with traditional relationships.

In another shift, many warehouses will move closer to consumers, enabling e-commerce orders to be delivered more quickly and inexpensively. It’s also possible companies outside the logistics sector who understand direct-to-consumer needs, will enter the industry.

Given the changes on the horizon, both 3PLs and shippers need to rethink their roles. Logistics providers must work with clients to establish more resilient, adaptable flows of goods from manufacturers to consumers. This includes both the physical handling of products and the intelligence of the supply chain.

“Hang on to your hats,” Tompkins says. “It is time to think anew and reinvent the relationships between 3PLs and their clients.” ■



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TRUCKING RELATIONSHIPS

IN IT FOR THE LONG HAUL



Supply chain disruption is testing relationships between shippers and their core trucking carriers. Here's what transportation partners are doing to preserve their ties—today and for the future—in challenging times.

BY MERRILL DOUGLAS

From children who couldn't play with friends to adults who shifted happy hours to Zoom to families stuck with window visits at the nursing home, people have seen COVID-19 disrupt relationships. Something similar has happened to shippers and their core trucking carriers.

Every long-term commercial relationship has ups and downs. But since early 2020, the pandemic—which brought business closures, surges or drops in demand for certain commodities, a tsunami of e-commerce shipments, new safety protocols, and other challenges—has tested shipper-carrier partnerships in new ways.

Successful partners learn to adjust. The tactics shippers and truckers use to strengthen their bonds in the current emergency suggest broader lessons about how to reset strained relationships and keep them healthy for the long haul.

INFORMATION FLOW

Ask transportation professionals how to build strong relationships—the kind that will see you through in both normal and exceptional times—and one message comes through loud and clear: You need to talk.

“We’re not only in the transportation business—we are also in the communication business,” says Dominic Zastarskis, chief executive officer at GP Transco, a full truckload carrier based

in Joliet, Illinois. “Anyone with a truck can transport a shipment from point A to point B. But what do you do when something goes wrong?”

Proactive communication is the key. That means sharing information about expectations, forecasts, capabilities, changes in shipment status, and performance results.

When Ryder Systems’ “asset light” division enlists a core carrier for a shipper, it starts by defining the shipper’s service and volume requirements. “Once we have those requirements clearly communicated and documented,

then we align on what volume and capacity those carriers can provide,” says Dave Belter, vice president and general manager of global transportation management at Ryder.

In its asset-based dedicated trucking business, Ryder uses a process called customer due diligence to launch its relationship with a shipper. “Prior to rate contracting, we’ll sit down and, with a very thorough lens, go through the request for proposals and validate all of our assumptions,” says Steve Martin,

Ryder’s senior vice president of dedicated transportation solutions.

Then, as Ryder implements the plan, it measures performance. “We create an environment of transparency that builds trust,” Martin says.

Information flow also plays a critical role while shipments are in progress. “You need to implement a proactive way to communicate delays,” says Zastarskis. For example, GP Transco uses an application programming interface (API) to pull data from the National Weather Service into its proprietary transportation management system

While shipper-carrier collaboration relies on shared facts, it’s equally important to forge trusting personal relationships.

(TMS) and leverages that information when building routes.

“That helps us to proactively communicate to the customer if any delays are expected,” he says.

While shipper-carrier collaboration relies on shared facts, it’s equally important to forge trusting personal relationships. Austin Hurst, co-founder of eOn mist, which launched a disinfectant and hand sanitizer business in 2020, has formed such a bond with a call center representative at Averitt Express.



During the pandemic, Averitt cemented partnerships with its customers by nurturing collaborative and personal relationships, and going above and beyond to meet rapidly evolving business needs and demands.



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“He tells me what will happen, and it always does,” says Hurst. “That takes a lot of extra effort—a lot of phone calls being made behind the scenes. His mission is, ‘I can’t fail eOn.’”

FACE TO FACE, OR SCREEN TO SCREEN

Many partners use in-person meetings to strengthen their personal bonds. Site visits also give shippers a chance to better understand what carriers can provide.

“We encourage reps to bring customers to our facilities and show them how our tools work,” says Steve Hartsell, vice president of field sales at Old Dominion Freight Line (ODFL), a national less-than-truckload (LTL) carrier based in Thomasville, North Carolina. For example, employees demonstrate how they use dunnage to protect freight in transit.

In pre-COVID-19 times, Sweetwater, an e-commerce retailer of musical instruments and music technology in Fort Wayne, Indiana, held periodic face-to-face meetings with its primary carriers. “They would walk through to take a look at the docks and the distribution center,” says Robert Gerwig, senior vice president of distribution and logistics. Then the partners would adjourn to a conference room to review metrics.

In the COVID-19 era, meeting face to face can be a risky proposition. But shippers and carriers have found other ways to keep up their conversations.

ODFL sometimes has food delivered to a customer’s location, so the customer and an account rep can have lunch together while meeting on Zoom. “We have had some face-to-face meetings, but most of them were in the lobby or parking lot, where everyone wore a mask and stayed six feet apart,” says Hartsell.

Technology helps Schneider Logistics and its contract customers communicate more often than they used to pre-pandemic. “Relationships still matter, and they matter even more in a situation like this, where we need to help our customers manage through the crisis,” says Bill Matheson, chief commercial officer at Schneider in Green Bay, Wisconsin.

FAST FRIENDS

While the pandemic has added new burdens on many transportation relationships, it has also cemented some new partnerships.

Take the case of eOn mist, a Los Angeles-based startup that launched new lines of hand sanitizer and disinfecting mist in the early months of the pandemic. The company nearly botched its very first sale to CVS when its LTL carrier misrouted a shipment of bulk liquid due at eOn’s contract filler in St. Louis.

Seeking rescue, eOn connected with Averitt Express, which transferred the shipment—stuck in Florida—to one of its own trucks. The ingredients reached St. Louis in time for eOn’s appointment on the filling line. “The truckers were able to go 17 straight hours because there were two drivers, a husband and wife team,” says Austin Hurst, co-founder of eOn mist.

Good communication, and technology for tracking that shipment, helped Averitt win Hurst’s trust. “It gave him a sense of stability and reassurance,” says Rogers Luna, vice president of sales at the carrier, based in Cookeville, Tennessee.

Based on that initial success, eOn has been using Averitt to transport all its ingredients and packaging materials among partners that produce its products, and sometimes to move finished product to retail customers. This is all expedited service. That’s a costly option, Hurst concedes, but eOn needs fast, flexible transportation to keep its production lines moving.

“The pandemic created enough volume that we had to run everything expedited to keep up,” Hurst says.

Sweetwater still sometimes brings carriers to its headquarters, while carefully following Indiana’s safety guidelines and the carrier’s own rules. For instance, after holding one business update with FedEx by phone, Sweetwater convened the next one on site.

“FedEx’s corporate travel and face-to-face meeting guidelines had changed,” says Gerwig. “And it was helpful, because that was the first time they had been in our new distribution center.”

Besides forcing new strategies for business meetings, social distancing protocols can also disrupt shipper-driver interactions. “Some customers no longer allow our drivers on their docks to make sure that the shipments are properly loaded and secured,” says Zastarskis.

Drivers still check the loads once their trucks have left the docks, he adds.

And GP Transco makes sure that drivers appreciate shippers’ safety

concerns and follow their rules, says Sergey Bort, the company’s vice president of marketing and strategic business development.

An internal Facebook page, where GP Transco’s drivers discuss their interactions with shippers, provides valuable insights, helping the company understand its customers’ needs. “We learn things about shippers that we wouldn’t know, because we’re not at the shipper every day, as the drivers are,” says Bort.

Ryder has created a task force to monitor COVID-19 safety guidelines as they change over time, and it works with customers to adapt business processes to meet those requirements. For instance, Ryder created a “drive-by dispatch” process for one grocery distributor.

“Drivers would stay in the truck, and we created a way to exchange documents in a distanced way that allowed us to maintain personal protection,” says Martin.

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month

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transportation assets

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omnichannel
shipments per month



ADJUSTING TO VOLATILE DEMAND

While safety protocols challenge personal relationships, the pandemic's economic effects have strained partnerships by altering shipping patterns—closing factories, boosting demand for some products, and slashing demand for others.

“Some shippers saw increases in volumes that exceeded 20%, or in some cases 30%, of normal,” says Matheson. Trucking capacity tightened and prices rose.

Those changes created headaches for supply chain managers, who have been under pressure in recent years to keep their operations tight in terms of velocity, visibility, and speed. To keep product flowing, shippers and carriers have had to make significant adjustments.

Schneider has tried to smooth the transition by assembling data about changes in the market. Supply chain managers use this information to persuade corporate leaders that if they

“Relationships still matter, and they matter even more when we need to help our customers manage through a crisis.”

—BILL MATHESON, CHIEF COMMERCIAL OFFICER, SCHNEIDER

want capacity, they'll need to rethink their transportation contracts.

“The first and most obvious example is price realignment,” Matheson says. Truck drivers are doing a terrific job during the pandemic, he says. But it costs more these days to retain drivers and recruit new ones.

Averitt Express faced the opposite problem. When COVID-19 forced some of its dedicated service contract customers to shut in the spring of 2020, drivers who served those accounts suddenly had no work. Averitt didn't want to see those drivers move on to other employment.

“Customers knew they would come back into operation,” says Rogers Luna, vice president of sales at the trucking carrier, based in Cookeville, Tennessee. “They had relationships with the drivers, and they wanted those drivers back.”

Luckily, COVID-19 relief dollars helped Averitt preserve those relationships. “The federal government stepped in and allowed drivers to be paid while on furlough,” Luna says.

As demand patterns have fluctuated during the pandemic, Ryder's asset-light business has used business intelligence technology to monitor changes in customers' shipping networks.

“That allows us to immediately see where the volumes are shifting and what lanes are underperforming,” Belter says. Measuring factors such as tender acceptance and on-time pickup and delivery, Ryder pinpoints lanes that need more capacity or more responsive providers.

Ryder's technology can also overlay different shippers' transportation networks on screen, revealing where

During the pandemic, as capacity tightened and prices rose, shippers and carriers had to make significant adjustments to their transportation strategies. To help, Schneider provides customers with market data about capacity, prices, and contracts.



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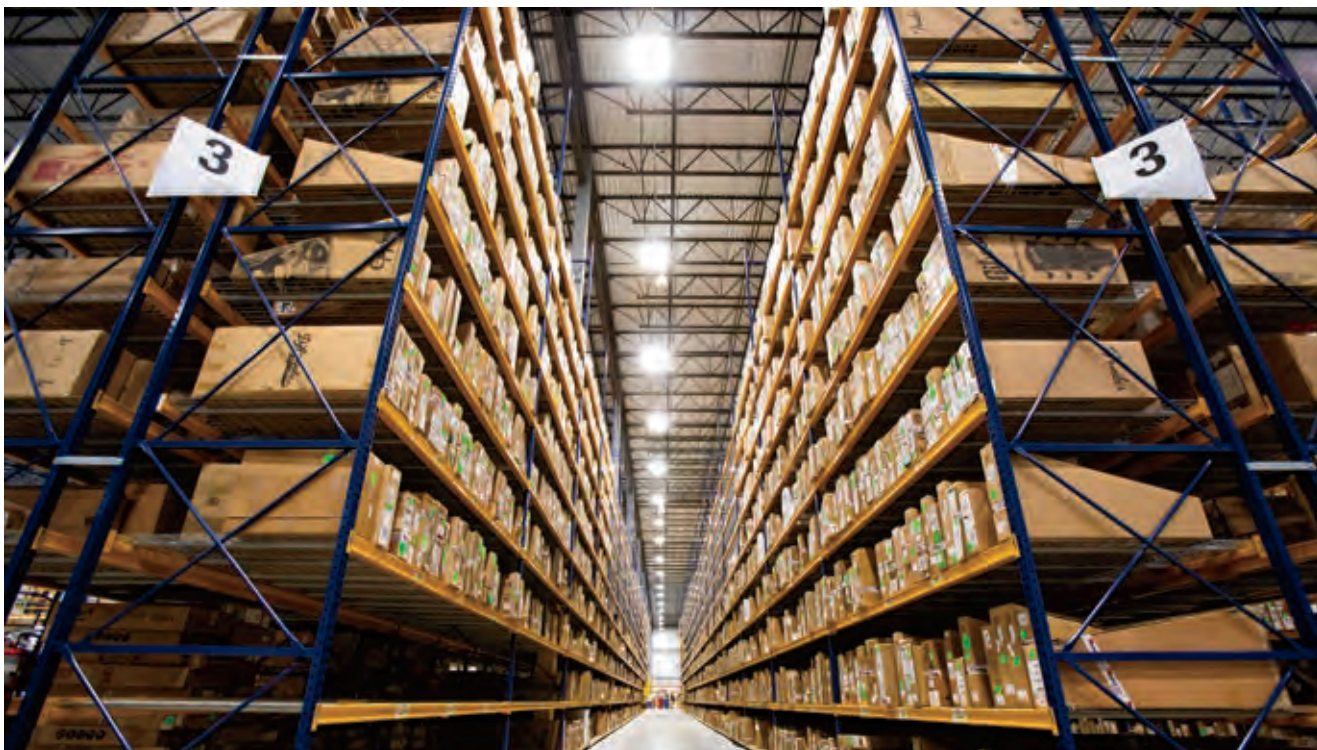
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Before the pandemic, musical instrument and music technology retailer Sweetwater invited its primary carriers to visit its distribution center. Now, social distancing guidelines force companies to change their face-to-face meeting strategies.

“We’re not only in the transportation business—we are also in the communication business.”

—DOMINIC ZASTARSKIS, CEO, GP TRANSCO

carriers are delivering loads and which markets need more capacity. “Then we can talk to our carrier partners about potentially contracting that capacity on another lane,” Belter says.

While some shippers and carriers struggle to match capacity with demand, others see relationships falter due to erratic shipping schedules.

For instance, when Sweetwater’s vendors face glitches in their own supply chains, it’s hard to give reliable information to Sweetwater’s inbound carriers. Sometimes a truck will show up at a supplier for a scheduled pickup, only to find that the shipment isn’t ready.

So Sweetwater coaches suppliers on the importance of frequent status updates, and it micromanages its relationships with carriers to keep them informed. “Pre-COVID, maybe we would talk to the

account manager at a trucking company,” Gerwig says. “Now we call the account manager, the branch manager, and in some cases, we call the drivers.”

ADVICE FOR THE LONG HAUL

Shippers working to maintain good relationships with core carriers, during the pandemic and for the future, can start by using data to gauge the quality of current partnerships.

“Measure some key performance indicators to make sure the carrier has capacity for you, that you are important enough to them to bring trailers, to have drivers pick up and move your freight,” says Hartsell at ODFL.

Some shippers come right out and ask how important they are to the carrier’s business and whether the carrier plans to offer more service in key geographic

regions. “We tell them how important they are to us and what our plans are,” Hartsell says. “The key is, you have to stick to it.” Carriers should never overpromise, he adds.

Martin also points to the role of metrics: “Agreeing on what you’re measuring keeps a quantified focal point that helps you identify when things aren’t working,” he says. “It creates an opportunity for both parties to participate.”

While numbers are important, shippers and carriers also should spend time building their relationships. And those relationships need to be collaborative, not adversarial. Partners who feel comfortable with one another don’t hesitate to share bad news when it comes up. “Then you can start working on a compensating strategy,” says Gerwig.

“The only lasting relationships in supply chains are those that are win-win,” says Matheson. “Make sure there’s open dialog and try to understand the other position as well as you understand your own.” ■

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IoT, AI, ML:

KEEPING INNOVATION IN SIGHT

Supply chain leaders eye up the Internet of Things, artificial intelligence, and machine learning to better predict demand, increase efficiency, cut costs, and power growth. BY KAREN KROLL

Robert Bosch LLC, more commonly known as Bosch, operates more than 270 manufacturing plants and thousands of manufacturing lines to produce millions of products. These include mobility solutions, consumer goods, and energy and building technology. Bosch management has set a goal of ensuring that, by 2025, all its products will either contain artificial intelligence (AI) or have been developed with the aid of AI.

Among other applications, Bosch is currently using AI to improve quality, plant logistics and efficiency, and to reduce costs. “Our use of AI is widespread,” says Rahul Kapoor, vice president and global head of AI, Bosch Center for Artificial Intelligence.

For instance, Bosch is using AI to improve intraplant logistics, or “milk runs,” in which materials move from warehouses to production lines to support just-in-time manufacturing. Previously, the materials were shuttled

at fixed times on fixed routes.

While that worked well, the schedules created with AI help manage demand changes and introduce flexibility. “The solution is helpful to optimize and dynamically adjust routes, so we only deliver and pick up material where it’s truly needed,” says Andy Hassold, connected industry consultant with Bosch Rexroth, a subsidiary of Bosch.

Bosch also combines a manually developed sales and demand forecast with one produced using machine learning (ML). “We’ve seen improvement by combining the methods,” Kapoor says.

Supply chain professionals across numerous verticals are implementing technology solutions that incorporate AI and its subset ML, as well as the Internet of Things (IoT). While the pandemic may have slowed investments, it hasn’t stopped them. About two-thirds of organizations responding to a recent Gartner survey either didn’t change or increased their planned AI investments since the onset of the pandemic (*see sidebar, page 170*).

In another survey, IDC found that growth in spending on IoT slowed in 2020, but was still up 8.2%. IDC predicts a return to double-digit growth in 2021.

DRIVING GROWTH

What’s behind the sustained investments? “It’s a combination of AI, IoT, and ML, now turbocharged by 5G, that is revolutionizing supply chains,” says Warren Chaisatien, global director of IoT customer success marketing with Ericsson, a Swedish networking and telecommunications company. Among other capabilities, the technologies can analyze data, including real-time sales and customer preferences, to better predict demand. In warehousing,

DEFINING MOMENTS

Just what do the acronyms AI, ML and IoT mean?

While it’s difficult to find a universally accepted, single definition, the following are reasonable starting points.

Artificial intelligence (AI):

Refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions, according to Investopedia.

Machine learning (ML):

A subset of AI. Refers to teaching machines to make predictions without explicitly programming them. Instead, they use historical data to predict new outcomes.

Internet of Things (IoT):

IoT refers to connecting devices and capturing input from multiple sources.

AI-powered visual inspection can identify and correct damage before products are shipped out.

Among the verticals implementing these technologies are retail, manufacturing, and food production. One common thread across these supply chains: “They’re no longer linear,” says Drew Ehlers, global futurist and general manager of SmartPack, a load planning solution from Zebra Technologies.

These networks replace supply chains, and distribution centers, warehouses,

manufacturing plants, and retail stores all become fulfillment nodes. “Fulfillment happens dynamically across the network,” Ehlers adds.

ENSURING FOOD SAFETY

In food production and distribution, these technologies can ensure safety and quality. Schwan’s Home Delivery, a leading direct-to-home food delivery company, operates 300-plus depots and more than 3,000 trucks, all of which need to be kept at specific temperatures—well into negative numbers—to ensure food safety and quality. Until recently, employees manually checked and recorded the temperatures, including after hours and on weekends.

No more. Schwan’s is implementing wireless sensors within the trucks and freezers that continually monitor temperatures and transmit the findings to both drivers and management. “I can see the freezer temperatures on all trucks at a glance,” says Larry Gaskin, national director of warehouse operations. “It provides a level of confidence.”

As of mid-October 2020, about one-third of Schwan’s trucks and depots had been outfitted with the SmartSense



Bosch designs and implements AI for smart, connected, and autonomous technologies across all its manufacturing business sectors.

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AI INITIATIVES LOOK TO GROWTH

VALUE SEEKING

75%

will continue or start new AI investments in the next 6 to 9 months.

GROWTH

50%

say their primary AI investment is focused on revenue growth or CX/customer retention.

STRATEGIC INVESTMENTS

66%

will increase or not change AI investment strategies (since onset of COVID-19 crisis).

CONTAINMENT

30%

say their primary AI investment is focused on cost optimization.

Twenty-four percent of respondents' organizations increased their artificial intelligence (AI) investments and 42% kept them unchanged since the onset of COVID-19, according to the results of a September 2020 Gartner poll of roughly 200 business and IT professionals.

Growth—namely customer experience and retention as well as revenue—along with cost optimization were the top focus areas for their current AI initiatives.

Over the course of the next six to nine months, 75% of respondents will continue or start new AI initiatives as they move into the “renew” phase of their organization's post-pandemic reset.

“Enterprise investment in AI has continued unabated despite the crisis,” says Frances Karamouzis, group chief of research at Gartner. “However, the most significant struggle of moving AI initiatives into production is the inability for organizations to connect

those investments back to business value.”

While 79% of respondents say their organizations are exploring or piloting AI projects, only 21% state their AI initiatives are in production.

LACK OF AI TALENT IS A MYTH

The minimal strides made across organizations in operationalizing AI cannot necessarily be attributed to a lack of AI talent. Only 7% of respondents said that limited AI skills are a barrier to AI implementation, finds a Gartner survey of 607 IT leaders in November and December 2019. Instead, security and privacy concerns, along with the complexity of integrating AI within existing infrastructure, are at the top of the list.

“AI talent is not one thing; it's multiple things,” says Erick Brethenoux, research vice president at Gartner. “The biggest misconception in the journey to successfully scaling AI is the search for ‘unicorns,’ or the perfect combination of AI, business, and IT skills all present in a single resource.

“Since this is impossible to fulfill, focus instead on bringing together a balanced combination of such skills to ensure results,” he says.

Organizations with the lowest AI maturity level are not experiencing a shortage of AI skills, with 56% reporting they either have enough talent or can easily hire or train AI talent. As organizations increase in AI maturity, so too does the level of reported AI talent, with 89% having no issues acquiring AI skills at the highest maturity level.

solution from Digi International, a provider of IoT technology.

Installing the sensors is easy enough that each depot can do it themselves. And when the company retires a truck, it can simply take out the existing equipment and move it to another truck. “It's easy to install and follow up on,” Gaskin adds.

AI can also help food producers and retailers quickly establish the provenance of an item, says Rob Bailey, chief executive officer and founder of BackboneAI, a data automation company. Using AI, data on the farm where a piece of produce was grown can be mapped to the destination data at the retailer, and then probabilistically identify the source of items that might be contaminated—all within minutes. Historically, this process has taken weeks.

These technologies may even improve the global food supply chain. In 2019, IBM and Yara, a crop nutrition company, partnered with the goal of increasing food production on existing farmland by applying AI, ML, and big data within a global digital farming platform. This platform will integrate with IBM Food Trust, a blockchain-enabled network of food chain players. Ultimately, the new platform will enable “greater traceability and supply chain efficiency,” the companies say.

RETAIL AND CPG BENEFITS

While the pandemic has hammered many brick-and-mortar stores, it also accelerated the shift to online shopping. That's prompting many retailers to invest in AI for several reasons, including to improve inventory and supply chain management and better predict demand, according to Meticulous Research.

For instance, AI can assemble and analyze data from point-of-sale and inventory systems and identify patterns. Then, it would let a retailer know that instead of the dozen cases of Coke it typically sells in one shift, it only sold six, for example.

With this information, users can determine what's behind the change and take action, including adjusting their supply chains.

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Direct-to-home food delivery company Schwan's applies IoT monitoring to protect critical inventory across its delivery fleet and depot locations.

Similarly, consumer product companies can deploy AI to read demand and then adjust their supply chains to optimize what they sell to each retailer, says Dinand Tinholt, vice president of insights and data for consulting firm Capgemini North America. AI can also help them repurpose machines to reflect changes in demand.

Retailers and CPG firms can also use AI to personalize products. Nike Fit, for instance, uses a mix of technologies, including data science, ML, and AI, to collect more than one dozen data points from customers' feet. It can then recommend the shoe size likely to best fit them.

Not only does this improve customer service, but it can also reduce returns.

The top reason for online returns in 2019 was incorrect size, fit, or color, found "The State of Online Returns," a Narvar report.

MANUFACTURING REVOLUTION?

Like Bosch, many manufacturers are using, or are interested in using, AI and IoT to improve production and distribution. "We've seen an acceleration of digitization," says Rohit Gupta, chief executive officer and co-founder of Auditoria.AI.

Some manufacturers are connecting machines and equipment with IoT and then applying AI to more precisely schedule maintenance. "In the old days, you'd just run a machine until it broke down," says Alan Salton, director of innovation with Panorama Consulting Group.

Or, a plant manager might set rather arbitrary maintenance schedules—say, performing maintenance after 300 runs—whether or not it was needed. By alerting management to upcoming maintenance needs based on a machine's operation, AI can reduce machine downtime and minimize scheduling disruptions.

As Bosch is doing, manufacturers can deploy AI for demand and supply planning. With AI, they can more accurately determine what and when to order from vendors, and whether they should, for instance, move products from Illinois to Arizona to capitalize on a demand uptick there.

The potential from combining IoT, 5G, AI, and ML within manufacturing will likely lead to "a renaissance of innovation in the entire manufacturing space in the coming year," Tinholt says.

While AI, IoT, and ML hold great promise, a few steps can boost an implementation's effectiveness.

• **Start with a strong business case.** "Don't just go after the shiny stuff, but

understand what the technology can do for the company and its processes," Hassold says.

• **Clean and update data before starting.** Without accurate, updated data, any predictions are apt to be less reliable.

• **Keep in mind that the greatest value comes from solutions that provide insight to the future.** "Lots of companies can report what happened," Tinholt says. "You need to bring in what's going to happen."

• **Look for solutions that minimize reliance on the IT staff**—which often is already stretched thin—or that require a background in data science, advises Gary Brotman, vice president of product management and marketing with Secondmind, a provider of AI-powered decision-making platforms.

At the same time, companies "should do their homework and learn what's under the hood" of any decision-making solution, Brotman suggests. That is, they should understand why the system recommended one action over another.

• **Incorporate security from the initial design**, rather than view it as the figurative "cherry on top of the cake," Ehlers says.

THE POTENTIAL FROM COMBINING IoT, 5G, AI, AND ML WITHIN MANUFACTURING WILL LIKELY LEAD TO "A RENAISSANCE OF INNOVATION IN MANUFACTURING NEXT YEAR."

—DINAND TINHOLT, VP OF INSIGHTS AND DATA, CAPGEMINI NORTH AMERICA

RISKS OF WAITING

The challenges of implementing these technologies are real, yet inaction also carries risks. Companies that move forward with implementations are seeing competitive advantages, whether from operational efficiencies or developing the ability to add new features into their products.

Because the technologies continue to advance, firms that wait risk being left behind. Says Hassold: "The longer you wait, the farther you'll drift apart." ■



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UNCORKING LAST-MILE BOTTLENECKS

Companies sometimes get jammed up trying to move goods to customers' doorsteps efficiently, safely, and quickly. Here's a look at last-mile innovations that help break the deadlock. BY KAREN KROLL

When consumers place online orders for bestselling novels, tennis shoes, and T-shirts, those purchases may travel thousands of miles before they reach their destination. Of those, the last mile accounts for 53% of total shipping costs, Business Insider Intelligence reports.

"The final mile is the most expensive, most bottlenecked part of the supply chain for anything going direct to consumer," says Chris Bell, chief executive officer of Perch, an omnichannel company that acquires and operates fulfilled-by-Amazon (FBA) companies.

Why the bottleneck? Moving packages from vehicles to consumers' front doors requires a higher degree of human labor than other segments of the supply chain.

MAGNIFYING THE CHALLENGES

The pandemic and subsequent shift to online shopping, while a bright spot in a generally difficult financial year for many retailers and consumer brands, has magnified these challenges, says Khaled Naim, chief executive officer of Onfleet, a San Francisco-based firm that helps organizations streamline delivery operations.

In addition, to minimize health risks, more customers are requesting contactless deliveries, compelling carriers to find a way to capture signatures electronically.

MANAGING THE SPIKE

Further exacerbating these challenges was the spike in business during the holiday season. E-commerce sales during the 2020 holiday season were expected to jump 33% from the previous year, reaching \$189 billion, according to Adobe.

Carriers such as UPS and FedEx reportedly began to limit major retailers to previously agreed upon volumes. "The 2020 peak season was tough for retailers because the distribution networks were so overtapped," says Mike Daher, U.S. transportation leader with consulting firm Deloitte.

While the spike from the holiday season abates, the rise in e-commerce sales shows no signs of stopping. Growth in urban last-mile deliveries will increase by 78% by 2030, predicts the World Economic Forum.

To move goods to customer doorsteps efficiently, safely, and quickly—while

also providing visibility to delivery times and assuring purchases will arrive on time and in good condition—many companies need to overcome strained distribution networks, time-consuming manual processes, driver shortages, and urban congestion.

These challenges are significant, but not insurmountable. At a broad level, retailers and others need "to marry the digital and physical universes," says Loudon Owen, chair and chief executive officer of DLT Labs, which develops distributed ledger solutions.

"Store operations have centuries of experience in placement, logistics, and procurement," he notes. That's not the case with online commerce.

Specific solutions include automating the processes that feed into the last mile, precisely planning transport loads, and leveraging technology. Microfulfillment centers (MFCs) and other storage capabilities located near population centers are additional options.

START AT THE FIRST MILE

Accelerating a supply chain's final mile should begin with the first mile, says Simone Ross, chief operating officer with

supply chain software provider Setlog. Too often, the desire to cut time from the delivery cycle falls to the “firefighters” working on the last mile. “Look at the first mile and start the process there,” Ross says.

This could mean automating the purchase order approval process and/or providing one solution through which all parties can quickly find information and updates on deviations from the plan as they occur.

“What has been lacking is a holistic view of supply chain management,” Ross says. Absent this, “you don’t see how much time is wasted.”

The Home Depot, the Atlanta-based home improvement behemoth, has been investing in its supply chain and last-mile delivery strategies for several years. “Our supply chain is the foundation of delivering on our customers’ changing expectations,” says Kyle Dennis, vice president, supply chain development.

Among other steps, The Home Depot implemented mechanized floor loading in two-thirds of its facilities. This and other investments proved key when online sales jumped by about 80% in the third quarter of 2020, according to its third-quarter conference call.

Another worthwhile step is working with suppliers so they pack shipments in a way that’s streamlined for the warehouse to which they’re shipping. “Your time is often well spent doing these things, versus racing to be five minutes earlier while delivering packages,” Ross says.

When delivery drivers arrive for work, the goal should be to enable them to get on the road as quickly as possible, rather than use them to spend hours sorting their loads. “Get the drivers driving,” says Bell.

That requires pre-sorting loads to “a minute level,” Bell says. One example: The individuals loading trucks place all packages headed to one neighborhood in the lower right corner to boost driver efficiency.

THE POWER OF LOGISTICS PROVIDERS

Many companies benefit by working with third-party logistics (3PL) providers, says Steve McIsaac, senior vice president of brokerage operations with NTG. In fact, 79% of 3PLs grew in 2020, according to a 3PL Central survey.

Solid logistics providers have the resources and partnerships that can help retailers and brands adapt to changes in consumer demand like those seen in 2020, McIsaac says.



Print-on-demand provider Printful ships and fulfills products same-day. When business surged during the pandemic, it restructured its routing system to more evenly distribute orders among its global fulfillment centers.

Since 2011, investors have plowed about \$18 billion into startups focused on the final mile, Daher says. Because completing the final mile requires not just software, but vast networks of vehicles and workers, disrupting it isn’t easy, he adds.

That said, technology can help. Just ask Nicolas Bartoli, who co-founded Léon & George, a premium online plant store, about four years ago. He left his position in software engineering to leverage his passion for plants.

When the pandemic hit, demand picked up. A positive, yet it also caused challenges.

When delivering the plants, Léon & George strives “to provide the best experience to sophisticated clients” and make it easy for customers to incorporate greenery within their homes. However, communication about deliveries—say, to let customers know of a delay—was difficult, Bartoli says, making it challenging to meet expectations.

To address this, Bartoli and his team implemented the Onfleet platform,

THERE HAS NEVER BEEN A TIME OF GREATER DEMAND FOR LAST-MILE TRANSPORT



URBANIZATION

60%
people living
in cities in
2030

20-35%
congestion
increase since
2010



CUSTOMERS

2.1B
people
expected to
buy goods
online by
2021

20%
online retail
share by
2023



PRODUCTS

10%
per annum
e-grocery
growth
worldwide

32%
furniture sold
online by
2023 in the
U.S.



DELIVERY

20-40%
growth in
same day

10%
per annum
growth in
instant
delivery



TECHNOLOGY

14-35%
electric vehicle
share of new
car sales
across regions
by 2030

2024
year most
OEMs will
release L4/5
autonomous
vehicles

THE WORK OF THE BULK

The usual last-mile challenges intensify when delivering heavy and bulky items. To start, many of these items take longer to deliver, especially when they require assembly, notes Chris Bell, CEO of Perch. Assembly times can range from minutes to hours, leading to variations in the time per delivery. Most of these deliveries have to occur within a set time frame and when the customer is home.



In addition, the delivery “can make or break the customer experience,” Bell says. The delivery people can’t simply leave the packages on customers’ doorsteps and hustle to their next drop-off. Instead, they come into customers’ homes and interact with them.

Moreover, many large, bulky items are expensive. Customers are less likely to tolerate damages.

To address these challenges, start by determining what will make for the best customer experience, Bell says. When hiring, he and his team look for customer service experience first, and then for delivery experience.

In addition, his former employer retained local customer service representatives in each major market. The reps would contact customers two days before delivery, the day before delivery, and the day of delivery to confirm the appointment. If a mistake was made, the local reps would confirm the second delivery was the right one.

Sophisticated routing and customer service solutions are critical, Bell says. He notes that these deliveries often require two delivery employees. Companies need to boost efficiency without impacting the customer experience. Software is key to accomplishing this.

including its route optimization and dispatching capabilities. Bartoli’s background in software engineering allowed him to handle much of the implementation. “It was nothing out of the ordinary,” he says.

Now, Léon & George can schedule deliveries and offer customers accurate estimated arrival times. As important, the company can easily let customers know of delays or other issues.

THE LOWDOWN ON DLT

Distributed ledger technology (DLT) also plays a role, Owen says. Even the simplest invoice can contain several hundred data points that need to be distributed among multiple parties, many of which use different information management systems. DLT enables

secure information synchronization and sharing.

“The last mile isn’t about wheels and machines, but about information that’s trusted,” Owen says. “That means it is clean, clear, and up to date.”

Another concept that can help streamline the final mile is what’s known as “integrated final miles,” Bell says. This concept refers to sharing technology systems and solutions across a supply chain network to offer expedited delivery.

For instance, a national carrier may collaborate—often through crowdsourcing—with local, independent delivery drivers. This expands the pool of delivery drivers, while also allowing all parties access to information, sometimes through third-party apps.

Large national carriers are well designed to handle delivery routes that span about 500 miles or more, says Daniel Sokolovsky, chief executive officer of AxleHire, which provides same-day delivery services using a mix of crowdsourced drivers and third-party delivery companies. Because they use fewer hubs and spokes, regional carriers like AxleHire can often move packages more quickly over shorter distances, like the last mile.

For instance, a national carrier shipping a package from San Francisco to Oakland might first bring the item to its local San Francisco facility, ship it to a sorting facility in Oakland, move it to a local delivery facility in Oakland, and then deliver it.

In contrast, AxleHire would, for same-day service, pick up the package in San Francisco and deliver it to Oakland. For next-day service, the package would move from San Francisco to a local sortation facility in Hayward, and then travel to Oakland.

ADJUST THE DISTRIBUTION NETWORK

Before COVID-19, each global fulfillment center of Printful, a print-on-demand company, focused on its specific region. So, U.S. fulfillment centers would focus on U.S. orders, says Artis Ivanovs, shipping IT project manager.

When business surged during the pandemic, Printful restructured its routing system to more evenly distribute orders among all its centers. “This helped each location to reach its full potential and balance overall order volume,” Ivanovs says.

U.S.-bound orders were partially fulfilled in Europe and then shipped to the United States via freight forwarding, where final fulfillment occurred. Printful also fulfilled as many orders as it could in-house and then automatically routed surplus orders to its backup partners.

With these steps, Printful was able to maintain quality service without raising shipping rates, despite holiday surcharges, Ivanovs says.

In New York, about 10 million people located within about 20 miles



Home improvement retailer The Home Depot continues to open new distribution centers to support the growing demand for flexible customer delivery options.

of the Empire State Building spend more than \$16 billion annually through e-commerce, Deloitte research shows. In this and other urban areas, MFCs and parcel lockers can help cut last-mile delivery times.

MFCs can quickly reach critical masses of consumers and can be particularly useful in last-mile grocery delivery, Bell says. For starters, many grocers can carve out space for MFCs within their grocery stores at a relatively modest cost. They can store the most commonly ordered items within the MFCs, speeding order

fulfillment. And given that most grocery stores are close to population centers, delivery drivers can usually be at their first stops within minutes.

The Home Depot fulfills about 60% of its online orders through its stores, Dennis says. To facilitate pickups, The Home Depot added storage to most of its stores.

Many shopping malls could also be converted to ad hoc logistics centers, suggests Marco Encinas, director of product management with Teletrac Navman, a provider of location-based technology.

Some malls are struggling and have empty stores. And like grocery stores, many malls are close to population centers, cutting down on delivery times.

Parcel lockers or other community collection points are additional tools for managing last-mile deliveries. In one test by the Urban Freight Lab at the University of Washington, lockers reduced parcel delivery times to office buildings by more than 75%, when compared to traditional floor-to-floor deliveries.

GRIDLOCK AHEAD

By 2023, same-day delivery will be the norm for most online purchases, Deloitte predicts. As delivery times accelerate, technologies that aren't currently in wide use will likely gain ground. Drones show promise in remote and rural areas, while delivery robots might make sense within college and office campuses.

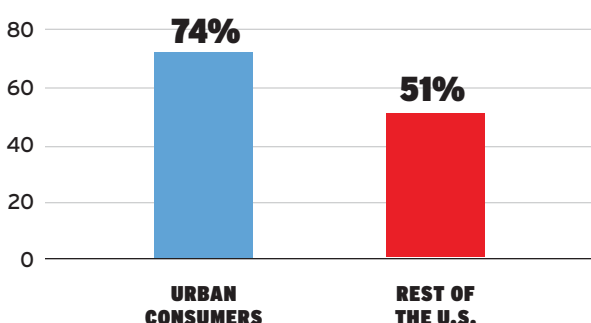
Autonomous vehicles "will impact over-the-road shipments sooner rather than later," Encinas says, given the long stretches of straight driving long-haul truckers do.

For many organizations, boosting the quality of their last-mile deliveries will require an ongoing commitment of time and money. However, few can afford to lose customers to competitors who better meet consumers' expectations. ■

RECOGNIZING THE NEED FOR AN URBAN FULFILLMENT STRATEGY

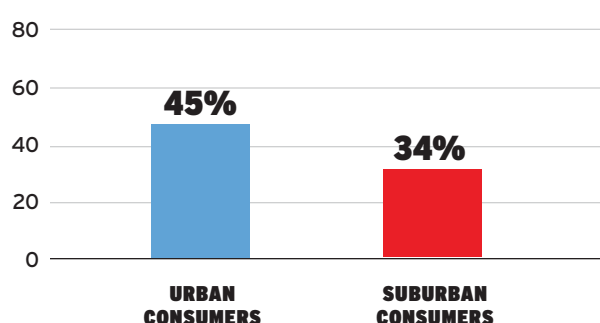
URBAN CONSUMERS INCREASINGLY USE THEIR PHONES...

Percentage of consumers who use their phones to make a purchase



...AND EXPECT SAME-DAY DELIVERY

Percentage of consumers who believe same-day delivery is important





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LOGISTICS CHALLENGES: Small Businesses Clear the Bar

How enterprising small and mid-sized businesses vault supply chain challenges, including a pandemic.

By Karen Kroll

Early in 2020, Mr. Lee's Pure Foods, a U.K.-based firm producing gourmet instant noodles, was focused on its business with European and Australian in-flight catering distributors. Then the pandemic halted most travel.

That presented two challenges: a loss of revenue and a surplus of inventory dedicated to the travel sector, says Damien Lee, the company's founder and chief executive officer.

About the same time, Mr. Lee's Pure Foods' launch in Whole Foods Markets in the United States was upgraded from a regional initiative to a national rollout across 480 stores. A promising change, yet Lee and his colleagues couldn't visit the company's California

manufacturing partner, nor conduct in-store promotions to build brand awareness.

"The only option was to retreat to our virtual offices, like the rest of the world, and adapt the way we worked and communicated with our partners," Lee says.

Tackling the loss of the airline business also required a quick pivot to other channels, mainly online, to maintain income. By advertising on social media, and aided in part by the overall shift to e-commerce, online sales increased fivefold, Lee says.

Yet this also led to other challenges, including delays due to the increased strain on the postal system. And in some cases, failures in the company's dispatch



DISRUPTION

processes—initially, they were tracking information across two systems—resulted in refunds or repeat deliveries.

To address this, Mr. Lee's Pure Foods accelerated its plans to work with a fulfillment company by about three months.

"Once all deliveries were consolidated into a single fulfillment partner, we had more control over the batches and could provide better updates as we reduced our service to normal delivery timescales," Lee says.

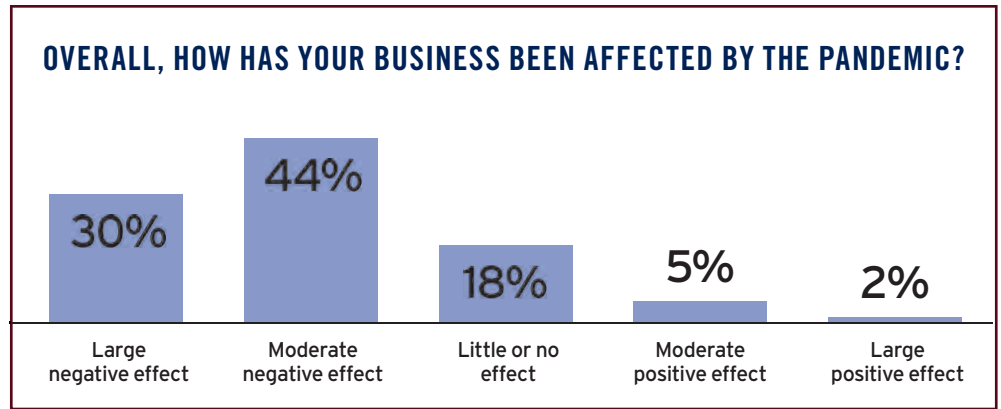
The online fulfillment partner also helped the company launch a new rice porridge product.

As part of this switch, Mr. Lee's Pure Foods integrated its web platform to the partner's shipping solution, freeing the team from manual data handling. To further expand within the United States, the company is "working hard to establish additional points of distribution and work with logistics providers that can help us lower costs," he adds.

Along with navigating the pandemic, Lee himself was undergoing treatment for



When the pandemic grounded its in-flight catering business, Mr. Lee's Pure Foods moved online with a fulfillment partner's help.



cancer. But the work didn't stop, especially with the Whole Foods launch.

"It's about keeping the team pumped and pushed," Lee says. "We were lucky that we didn't have to furlough anyone, and they did a great job of keeping the wheels turning."

PANDEMIC IMPACTS SMALL BUSINESSES

Just under one third—31%—of small businesses have seen a large negative effect from the pandemic, according to a recent Small Business Pulse survey from the U.S. Census (*see chart*). Thirty-eight percent saw a significant drop in revenue.

As the numbers show, few businesses have escaped the pandemic unscathed. Many retailers and consumer brands have been hit particularly hard.

"There are so many challenges when your primary place of business is no longer where people transact business," says Domm Holland, chief executive officer of Fast, an online checkout solution.

Instead, companies have had to move their businesses online. That has meant changing—in some cases, within days—the way they present and deliver products and accept payments.

Supply chains have been tested, with more than

one-quarter of respondents to the U.S. Census survey indicating they've experienced delays from domestic suppliers. These constraints led to more extended delivery time frames and short shipments, says Tom Kieley, chief executive officer and co-founder of SourceDay, a supply chain software provider.

Often, manual communication processes, such as email and fax, compound the challenges because they don't provide visibility to supply chain disruptions, Kieley adds. If shippers discover delays in real time, they can pivot to alternative suppliers and set expectations with customers.

Another challenge is that shipments from smaller businesses tend to be less consistent, and rarely run on the same day or to the same places, says Harris Rainbow, chief operating officer with NTG, a logistics provider.

Rather than contractual freight, small business shipments tend to be more "spot" in nature. That makes finding capacity a challenge at any time, but particularly when it's tightening, as it has been through much of the pandemic.

While not every business can completely escape the pandemic's impact, some enterprising ventures have

adjusted and changed to successfully navigate through the pandemic. Here's a look at just a few.

SEALING IN ROBOTICS

Beginning in March 2020, customers from across the globe accelerated purchases for the gaskets, vents, seals, and other products made by Lancaster, New York-based manufacturer Sealing Devices.

"Customers started to pull in orders that were out in June or July," says Scott Walrath, director of operations with the third-generation, family-run business. Some needed to fill increased demand for ventilators and similar products, while others likely worried about the potential impact a lengthy pandemic could have.

While the increased orders were, of course, a positive, they also posed challenges. Some employees were concerned about coming to work during a pandemic, while others faced child care obstacles.

"We discussed how to service customers who were depending on us, but with fewer people and while keeping employees safe," Walrath says.

One step was to implement social distancing and temperature-taking protocols. Sealing Devices also moved

part of its workforce from first to second shift to limit the number of people in the facility at one time.

Walrath and his colleagues also considered several technology solutions that would help limit employee interactions.

One was a vertically mounted conveyor that would move goods through the facility. However, the system would have required a lengthy implementation period.

They instead turned to an autonomous mobile robot (AMR) from Fetch Robotics. The AMR transports carts of goods, limiting the number of operators who must manually move about the facility.

With the robot, “we can keep operators safe in their own workspaces, while getting products delivered to the work cell they need to go to,” Walrath says.

During about eight weeks, Sealing Devices and Fetch collaborated remotely to map the facility, create workflows for the AMR, and link the robot to the company’s network. They also created the interface employees use to direct the robot.

While workers initially watched the robot traverse the facility with “quite a few eyes wide open,” Walrath says, they easily accepted it, and appreciate the safety it offers.

Moreover, the measures have paid off. Sealing Devices has been able to keep its employees healthy and also fill customers’ orders.

FINANCIAL FOCUS HITS THE MARK

By moving purchasing from operations to finance, DuraMark Technologies,



To limit employee interaction during the pandemic, Sealing Devices partnered with Fetch Robotics for a mobile robot solution. The companies implemented the solution through remote collaboration.

which makes durable safety labels and decals, was better able to navigate the pandemic, says Brandon Mills, chief financial officer with the Westfield, Indiana-based firm. The goals of the shift were to take more of a financial perspective with respect to procurement and supply chain, and more closely manage cash flow, on-time deliveries, and payments, among other metrics.

For instance, Mills and his team focused on monitoring supplier quality and delivery. Each week the finance team began publishing several metrics, such as the number of late purchase orders.

Since they’ve been doing that, the volume has steadily decreased. “Just seeing the number drives action,” Mills says, as the metric takes on a higher priority.

They also implemented policies to streamline purchasing and cut costs, such as placing some orders every six weeks rather than every other week. “We try to balance the cost of ordering all the time versus the cost of inventory,” he says. Mills and his team also set up multiple restocking agreements.

As part of this shift, DuraMark implemented a SourceDay solution that has eliminated many of the emails and calls that used to

occur between DuraMark and its suppliers, and has also boosted transparency. “Now, we use one tool to communicate with sales, operations, and suppliers,” Mills says.

For instance, DuraMark often receives requests to expedite customer orders. While many labels appear similar, orders often contain labels for different machines, requiring different languages.

As a result, expediting orders isn’t as straightforward as it might initially appear. With the new solution, everyone involved in the order quickly knows the status of all orders.

Management had long considered adding e-commerce capabilities to the company’s website to enable DuraMark to more efficiently work with smaller customers. With the pandemic, management allocated more resources to the effort, which went live in September 2020. It’s steadily acquiring customers, Mills says.

REHRIG RELIES ON A 3PL

Early in the pandemic, “panic-buying set in” for the pallets, crates, pails, and other products Rehrig Pacific Company makes for dairies, bakeries, and other food and beverage companies.

“Although we do around-the-clock production, this was truly churning and burning,” says Adrian Gil, senior logistics manager. “Every facility was at full capacity.”

To avoid food and beverage shortages, Rehrig, based in Los Angeles, wanted to partner with a reliable supply chain provider.

Gil and his team turned to NTG, an Atlanta-based third-party logistics provider (3PL), to help meet the unexpected jump in demand.

“NTG demonstrated the ability to support our business,” Gil says. “We often make unconventional requests because we serve a niche market. It comes with the territory.”

One example: NTG’s success in expediting a shipment for a broken machinery part meant the machine was operational the next morning. Throughout the pandemic, NTG was able to secure truck capacity with little lead time, even as overall capacity tightened.

Through its partnership with NTG, Rehrig was able to meet its customer commitments and even make additional commitments “that we may not otherwise have been able to make,” Gil says.

ACCELERATING DIGITIZATION

As was the case for many companies and organizations,

When panic-buying set in for its plastic bin products, and with every facility operating at full capacity, Rehrig Pacific partnered with a 3PL to ensure it met customer commitments.

the COVID-19 pandemic brought both pain and opportunity to American Crane & Equipment Corporation, which manufactures overhead cranes and hoists, among other products.



VAULTING TO SUCCESS

While every business is unique, several steps can help most organizations, no matter what size, address challenges like those presented by the pandemic.

Tap into others’ expertise. To gain insight on managing through the pandemic, especially early on when so much was unknown, Karen Norheim, chief operating officer and president of American Crane & Equipment, turned to other business owners and industry groups. “We helped each other figure out what to do,” she says.

Develop a resilient culture. Norheim calls it “grit.” American Crane employees are used to solving thorny engineering challenges, she says. “We leveraged that culture of being willing to get the job done, and demonstrate perseverance, heart, and integrity,” she adds.

Culture has also figured prominently at Sealing Devices, says Scott Walrath, director of operations. For starters, because the company regularly makes capital investments, employees are accustomed to adapting to new equipment. In fact, they named the robot brought on during the pandemic “Little G” in honor of the company’s late founder, Terry Galanis.

Check the infrastructure. Anyone considering an autonomous mobile robot should make sure the facility’s wireless network is strong enough to handle it, Walrath advises.

Ensure visibility among strategic partners. That way, everyone is better prepared to quickly react to changes, says Tom Kieley, chief executive officer and co-founder of SourceDay.

Where possible, help others while helping the company. Mr. Lee’s Pure Foods, for instance, donated products to essential workers and food charities. This helped the recipients and addressed the overhang of stock the company had dedicated to the travel sector.

“The pandemic offered an opportunity for us to grow and innovate to meet the challenges before us,” says Karen Norheim, the company’s chief operating officer and president.

The company’s digital transformation, implemented within months, was about three times what it normally would accomplish within a year, Norheim says. The first few months, when about one-third of the workforce began working remotely, American Crane focused on implementing new virtual collaboration tools.

“When you work remotely, things that shouldn’t be a big deal become difficult,” Norheim notes.

One example: obtaining engineering approvals. To address this, Norheim and her team implemented a digital signature solution. They

also began electronically transmitting CAD drawings and similar documents. In addition, they developed ways to conduct remote inspections by combining a mix of technology, including headsets, phones, and computers.

While American Crane had already planned to make these transitions, the pandemic accelerated the schedule.

“We plan to leverage these advances and continue the momentum,” Norheim says. These advances might include Internet of Things and additive manufacturing initiatives, among other solutions.

Along with technology, the right business approach is critical. “The winds of change are always blowing,” Norheim says. “We cannot direct the wind, but we can raise our sails and adjust as needed.” ■



RMX Global launches last mile northeast service.

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REVERSE **Logistics**

It's All Coming Back To Me Now

How to recoup maximum value on a product when the first sale doesn't work out.

by Merrill Douglas

When you shop online, you're more likely to return what you buy than when you shop in a store. And people are doing a lot more shopping online during the pandemic.

According to an Inmar Intelligence survey conducted in 2020, 81% of respondents planned to do more holiday shopping online in 2020 than in past years, and 39% planned to make all their holiday purchases through e-commerce.

"We've been telling our merchant partners they've got to gear up for what may be as much as a threefold increase in return volumes over past years," says Ken Bays, vice president of product management at Inmar.

The COVID-19 emergency will end someday. But the e-commerce habit, once acquired, tends to stick. With more consumers filling electronic shopping carts, retailers and brand owners need to hone their reverse logistics strategies to recover as much value as possible from products that bounce back.

Who takes charge?

Companies haven't always put a lot of effort into managing returns. "Most people didn't think much about it because return rates were modest, or they didn't understand the impact returns were having financially," says Charles Johnston, chief operations officer at goTRG, a Miami-based business that



provides a fully managed returns solution for retailers and manufacturers. Johnston ran reverse logistics for Walmart from 2005 to 2012 and served as director of repair and returns for The Home Depot from 2012 to 2017.

In Johnston's early days at Walmart, the standard practice was to send returned items back to suppliers, unless those vendors were overseas. Today, retailers and suppliers often take a more collaborative approach, he says. The goal is to maximize recovery by getting product into secondary markets faster, rather than running up costs with excessive handling.

"While 20 years ago, 85% of volume that came through would be handled by sending it back to the manufacturers, today I'd guess that 35% would be a high number," Johnston says.

Tony Sciarrotta, executive director of the Reverse Logistics Association (RLA) in Alpharetta, Georgia, saw a different evolution during his years in charge of returns management at Philips Consumer Lifestyle.

Back then, manufacturers often gave retailers allowances for products that consumers returned, and let the retailers handle liquidation, he says. Often, a retailer would throw miscellaneous products—headphones, coffee machines, and so on—into a gaylord box and sell the whole lot.

Concerned about the disposition of products that bore its name, Philips stopped the allowances. "We insisted on taking everything back, because as

a manufacturer we needed to maintain control over our brand," Sciarrotta says.

Today, either a retailer or a brand owner might take charge of returned merchandise, depending on the arrangement those partners negotiate.

Process, refurb, resell

Although a trip to the landfill is the worst reverse logistics outcome, many retailers do simply toss returned items. "They don't know that, even despite the handling costs, there is value in the product," says Johnston.

Others put mixed items on pallets and sell them to liquidators at rock-bottom prices. "They may be selling at 7% on the dollar, when there's product in there that you can recover 80% for," he says.

goTRG customers use its software to determine the most remunerative path for each returned item—whether to send it as-is to a clearance shelf, refurbish it for resale, or sell it into any of several kinds of liquidation channels. Retailers and manufacturers can also contract with goTRG to receive, process, refurbish, and resell returned inventory for them.

Inmar provides similar services. It recently formed a partnership with Happy Returns, which receives product for e-commerce merchants at "return bars" set up in retail stores across the United States.

"Our process takes over from Happy Returns," says Bays. "We open the package, evaluate the condition of the product, compare that to what the consumer said about the product,

and record all that data. Then our system uses that data to derive the best possible outcome."

Inmar, which operates from 21 locations across the United States, also provides those services to retailers that don't work with Happy Returns.

If an item arrives in great condition, it might go right back into stock. "For some customers, as much as 93% of everything that comes in is able to be cleaned up, refolded, reboxed if it's shoes, have new inserts added to the shoes, and then put back into a forward picking location so it can go out on a new sale," Bays says.

For items that are less than perfect, Inmar offers them to a network of 5,000 liquidation buyers.

When customers return products made by Acer America—bought in brick-and-mortar stores, through online retailers, or on Acer's own e-commerce site—all those products go to a reverse logistics center run by Acer. There, the electronics manufacturer wipes data from storage, checks products for defects, and makes hardware, software, and cosmetic repairs as needed.

If a product has many scratches and dents but still works, Acer keeps it to mine for spare parts, says Joyce Cruts, vice president of supply chain and operations at Acer America in San Jose, California.

Acer used to sell refurbished products through auctions, wholesale liquidators, and direct-to-end-user retail. But several years ago, the company cut auctions and wholesalers from its strategy.



goTRG invented software that eliminates human biases from returns decisions. The application harnesses data from more than 100 million universal product codes to determine the most lucrative disposition path for returned and distressed inventory.

FORECASTING PANDEMIC RETURNS

Those channels are fast, but they have drawbacks. “First, the recovery value is pretty low,” Cruts says. “Second, you have to be careful not to create channel conflict, because you don’t know where your products are going.”

Refurbished items that Acer put up for retail sale could end up competing with Acer products that liquidators were selling through the same channels.

“Now, we sell close to 100% directly to the end user,” Cruts says. Acer makes those sales through e-commerce sites such as the Amazon Renewed shop, eBay, Walmart.com, and Newegg, plus its own Acer Recertified shop.

Finding buyers

Brand owners and retailers seeking markets for returned product can work with companies like Inmar or goTRG, or perhaps with B-Stock Solutions in Belmont, California. B-Stock doesn’t process returns, but it helps sellers set up liquidation auction sites.

Amazon, Walmart, Target, and The Home Depot are among the companies that use B-Stock’s technology to sell merchandise by the pallet load. B-Stock also counts manufacturers and brand owners among its customers, says Marcus Shen, its chief operating officer.

Besides providing digital auction venues, B-Stock works with third-party logistics (3PL) providers to help with transportation. “If a large retailer sells a lot of merchandise, we prearrange a carrier to facilitate the transaction,” Shen says.

As product returns ebb and flow, companies need to determine how much labor to schedule to process them. Those calculations grew especially tricky in 2020, when the pandemic boosted demand for some products, squelched demand for others, and sparked a surge in online sales.

Grid Dynamics, a technology consulting company in San Ramon, California, faced this challenge along with one of its clients, a large U.S. retail apparel chain that shut down when the pandemic hit in March 2020. As it prepared to reopen later in the year, it had to determine how to deploy its workforce.

The retailer couldn’t rely on traditional forecasting models. “Traffic, demand, and return patterns in stores would be very different during the stabilization and recovery period,” says Ilya Katsov, head of data science at Grid Dynamics. Because COVID-19 was a wholly new experience, no one knew how it would affect consumer habits.

So Grid’s consultants looked for situations that could serve as proxies for COVID-19 in a forecasting model. For example, they examined how past flu epidemics had influenced store traffic and returns. “We also started to incorporate insights from other countries, such as China and Europe, that had the pandemic earlier,” Katsov says.

Data from the 2008 recession gave hints about consumer behavior during widespread unemployment. And data from mobile devices, obtained from Google, painted a picture of consumer behavior in the present.

“The retailer started to use this model and continued to update it, incorporating new, ongoing data,” Katsov says. “It helped them navigate through the recovery process reasonably well and optimize their workforce better than they would have done without any decision support tools.”

Companies trying to liquidate returned and overstock inventory used to rely on personal networks to find willing buyers. B-Stock offers a much bigger market.

“Instead of just opportunistically finding one buyer to negotiate with, we bring thousands of buyers to a platform where they can compete for inventory,” he says. Buyers using those auctions tend to be smaller entrepreneurs who resell products through e-commerce stores or small brick-and-mortar off-price retail businesses.

Larger companies buy liquidated product as well. During Sciarrotta’s days at Philips, he says, the company sold returned product—directly or through distributors—to off-price chain stores such as Big Lots, Ollie’s Bargain Outlet, and Bargain Hunt, and to online discounters such as Woot! (now owned by Amazon).

Advice from the field

Here are some other best practices that industry experts recommend for managing products that need a second life:

1. Use a central returns facility. At one time, Philips had its returns shipped to various partners around the United States for refurbishment—TVs to a company in Arkansas, DVD players to a company on the West Coast, and so on. Then a logistical analysis showed that it was more cost-effective to do all that work in one location.

“We said, the West Coast does a cheaper job fixing our DVD players, but if you’re shipping from east of the Mississippi, it costs more money than

Many companies liquidate their returned products by selling them to off-price chain stores such as Big Lots.



HOLIDAY SHIPPING SCARIES NOT OVER YET

New data from ShipStation digs deep into consumer attitudes toward returns during the holiday season, how returns influence purchase decisions, and where retailers need to scale up returns processes.

RETURNS AT THE FOREFRONT OF THE 2020 HOLIDAY SEASON

69%

of consumers say they expect to make more holiday returns in 2020 than in 2019, driven in part by their increased reliance on shopping online versus in stores.

26%

of consumers say they plan to make 26% more returns in 2020 than in 2019, on average.

RETURNS NOW PLAY KEY ROLE IN DRIVING HOLIDAY PURCHASE DECISIONS

1 in 3

customers say that returns policies and ease of returns impact their decision regarding which retailers to shop with during the holiday season.

1 in 4

say the returns window (how long they have to return) and cost of returns also influence their holiday purchase decisions.

THE INFLUENCE OF RETURNS IS HIGHER THAN EVER

1 in 3

say returns policy matters and ease of returns carry more weight in 2020 than in 2019.

1 in 4

say the returns window and cost of returns matter more in 2020.

JUST AS HOLIDAY SHOPPING HAS SHIFTED AWAY FROM STORES, SO HAVE RETURNS

68%

say they plan to complete returns by mail in 2020.

32%

say they'll be heading to stores.

you're saving on repairs," says Sciarrotta. Ultimately, the company created a central returns processing center in the Midwest.

Acer also uses one central facility to receive and refurbish returns. "That's for economies of scale, and to make it easier for the retailers," Cruts says.

2. Take control of reverse logistics.

To keep returned inventory from sitting on the books as a liability, it's important to process and resell it as fast as possible, Cruts says. That can be a challenge when retail partners are slow to ship product back to manufacturers, or their shipments encounter bottlenecks.

"We try to work with every channel partner to avoid hiccups in that process," she says. "One way to do that is to manage the logistics ourselves—to use one of our carriers, for example, instead of one of their carriers."

3. Move liquidation further up the supply chain. Once a returned product leaves the hands of the manufacturer or retailer, every additional person who touches it makes money, Johnston says. Cut the number of people in that chain, and you'll keep more of that value for yourself.

"A lot of things end up in pawn shops that buy them for 8 cents on the dollar and sell them for 20 cents on the dollar," he says. "You spend all this money getting it to the pawn shop when you could have recovered 30% selling it at the first point of touch."

4. Meet customer expectations. The fewer items customers return, the more

money retailers or manufacturers keep. And (except when shoppers buy clothing in three sizes, try everything on, and send two items back), the key to limiting returns is to make sure consumers are happy with product they buy.

"People don't bring things back just because it's a sport," says Sciarrotta. "They send things back because something went wrong."

The problem could simply be a disconnect between how an item looks on a website and how it looks in person. Or the product might be fundamentally inadequate.

Items that don't disappoint

To get to the root of such disappointments, Inmar runs analytics on data it collects about the reasons for returns. "We report that back to the merchant to identify things such as a certain SKU coming back frequently as too small," says Bays. "Maybe they need to look at their sizing chart."

Cruts and her team at Acer also monitor the motives for returns. "We give the feedback to our R&D engineers to ensure that the next generations of product are of a better design and don't have the same issues," she says.

No matter how excellent its future products, though, it's unlikely that any company will ever push returns down to zero. That's why smart sellers will continue to refine their reverse logistics strategies, hoping to keep more money in their pockets when they send returned products to their ultimate homes. ■



Acer runs a return logistics center where it wipes data from storage, checks products for defects, and makes hardware, software, and cosmetic repairs as needed. The electronics manufacturer sells close to 100% of its returned products directly to the end user.



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Everything's Coming Up ROSES

The complex art of floral logistics involves a delicate arrangement of proper packaging, refrigeration, and speed.

BY MERRILL DOUGLAS

Don't let flowers fool you. The blooms in a bride's bouquet are delicate, but flowers drive a muscular industry, generating about \$8.5 billion worldwide each year, according to *Bloomberg Businessweek*.

Flowers are also hardy travelers, often crossing oceans on the journey from farm to florist shop. As perishable items, though, flowers require careful handling as they move.

Most flowers sold in the United States come from Colombia or Ecuador. "Hundreds of growers in those countries ship their products to Miami, which is the hub for fresh-cut flowers," says David Armellini, president of Armellini Logistics, a refrigerated trucking company based in Palm City, Florida, and the largest transporter of flowers in the United States.

Many of those blooms reach the United States on aircrafts, although some make the trip in refrigerated ocean containers. From Miami, Armellini and other trucking companies rush orders to customers, including regional wholesalers, supermarket chains, and mass-market retailers.

California is the biggest domestic source of cut flowers. For example, Ocean Breeze Farms in Carpinteria, California, sells to retail florists and mass-market chains throughout the country. Depending on the buyer's preference, those orders travel via truck, parcel carrier, or airline, says Micheal Furlong, sales manager at Ocean Breeze.

Proper packaging, refrigeration, and speed are all essential to the success of the flower supply chain. And the status flowers hold as must-have gifts for special holidays makes flower logistics an even tougher proposition.

Special handling starts at the farm as soon as a flower is cut. "We put the flower in water and let it hydrate for one hour or two," says Hugo Cruz, owner and





Flowers from South America remain refrigerated most of the way to the U.S. buyer, with one exception—while they're in the air.

president at Tutuli Flower Farms in Carlsbad, California.

Then the flower, still in water, goes into a cooler, where it goes dormant. “Depending on the flower, that gives us a week, or two weeks, to sell it,” he says.

Cold storage lets Tutuli Flower Farms keep inventory on hand in case of an unexpected demand surge. “You don’t know if there will be a huge wedding in two weeks,” Cruz says.

Flowers cut at Ocean Breeze Farms stay in water during transportation to the central distribution center (DC) in Carpinteria. Outbound from there, product for customers in California remains in water buckets throughout the trip. The rest of the flowers travel in boxes.

“Some boxes have water cells in them,” Furlong says. Those need to stay upright. Other boxes can be positioned as needed.

While line-haul truckers transport flowers in refrigerated trailers, refrigeration isn’t feasible when parcel carriers make the deliveries. “We have to pack flowers to certain regions based on their particular weather issues, whether it be too cold or too hot,” Furlong says.

For instance, Ocean Breeze sometimes uses the same kind of insulating bubble foil used by e-commerce meal kit companies.

FRESH FROM THE FARM

Retailer 1-800-Flowers.com ships to consumers from its own facilities and offers same-day delivery through partnerships with independent florists. Customers who use its “Fresh From the Farm” service receive imported flowers directly from Miami.

Like Ocean Breeze, 1-800-Flowers.com pays special attention to weather and the cold chain. “We have done extensive research and testing on how floral varieties perform in different environments, and we customize our offerings to ensure customers receive high-quality product,” says Mark Smith, senior vice president of operations at the company in Carle Place, New York.

“For example, if a certain flower is sensitive to heat, we may ship that flower only from September through May,” he adds.

Trucking companies that serve 1-800-Flowers.com use nontoxic ethylene gas inhibitors in their refrigerated trailers; this helps extend the life of the stems.

Flowers from South America go into coolers at the farms and remain refrigerated most of the way to the buyer, with one big exception—while they’re in the air.

“There are no coolers on planes,” says Christine Boldt, executive vice president at the Association of Floral Importers of Florida (AFIF) in Doral, Florida. “But most of our product flies at night, when it’s cooler.” Landing in Miami, a plane rolls up close to a storage facility, where flowers move into coolers in less than five minutes.

On farms in mountainous Colombia and Ecuador, as growers pack flowers for shipment to the United States, they must account for differences between the cooler climate in those regions and the warmth of Miami, says Lorena Sandoval, director of cargo sales for Latin America, the Caribbean, and Eastern United States at American Airlines (AA) Cargo.

Many flowers that AA transports from South America stay in Miami for just a few hours, waiting in coolers or in shade outside the warehouse for connecting flights to Europe. In late October, for example, AA was busy transporting vast volumes of roses through Miami to Madrid for All Saints’ Day on November 1.

Flowers can withstand flights without refrigeration because shippers pack them carefully. “Shippers don’t load a lot of product in boxes, because they need to leave some air around the flowers,” says Sandoval. “The boxes have holes so fresh air can circulate.”

Growers also cut flowers at exactly the right time in their life cycle, aiming to keep them fresh even if the transit should take as long as 72 hours.

AA Cargo’s temperature-controlled containers and refrigeration facilities help ensure the freshness of flower shipments from origin to destination.





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While air cargo is the norm for transporting most flowers from Colombia and Ecuador, several years ago some shippers added refrigerated ocean containers into the mix. That move provided much-needed capacity when demand for flowers was growing in the United States but air capacity was tight.

Ocean transportation poses its own challenges. Flowers are largely a just-in-time industry; retailers order product as they need it, and mass marketers change the “recipes” for bouquets and arrangements quite often, Boldt says. So switching to a slower transportation mode required a new mindset.



Based in Carpinteria, California, Ocean Breeze Farms grows some of the most popular varieties of flowers sold in the United States. The company moves its flowers to retail florists and mass-market chains throughout the country via trucks, parcel carriers, and airlines.

Where Have All the Flowers Gone?

Sources of flowers imported to the U.S. (2017):

COLOMBIA	78%
ECUADOR	14%
MEXICO	2%
THAILAND	1%
GUATEMALA	1%
NETHERLANDS	1%
OTHER	2%

SOURCE: SOCIETY OF AMERICAN FLORISTS

U.S. Flower Production

Top States (2019)

CALIFORNIA	76%
WASHINGTON	6%
NEW JERSEY	4%
OREGON	4%
OTHER	10%

SOURCE: PETAL REPUBLIC

But ocean transport has advantages as well. Flowers loaded into refrigerated containers at the farms stay cool through the trip to the port and the ocean crossing. “It takes two weeks, compared to one and a half days, for the entire process to happen,” says Gary Staton, director of procurement at Bill Doran Company, a flower wholesaler in Rockford, Illinois, with 18 regional locations. “But since they’re under refrigeration, it’s okay for flowers to ship that way.”

“During holiday times—Valentine’s Day and Mother’s Day—ocean transport absolutely makes sense, because so much volume has to come to the United States,” Boldt says.

FLOWER FRENZY

Particularly for the one-day rose-buying frenzy on February 14, wholesalers and retailers order product in advance, and they have to store it somewhere, whether in a warehouse or at sea. “It makes sense for the flowers to go in a sea container,” she says. “Then you don’t have to worry about temperature fluctuations.”

For trucking companies that transport flowers to U.S. wholesalers and mass-market retailers, speed is crucial. This isn’t so much a race against flowers’ biological clocks as a rush to meet market demand.

Customers throughout the United States generally want their product 24 to 36 hours after it leaves Miami. “If it leaves on Thursday, it’s at the

customer’s door on Saturday morning,” says Armellini.

While Armellini Logistics also hauls chilled products such as butter and cheese, flowers account for about 70% of its business. It provides truckload and less-than-truckload transportation for flowers out of Florida, California, Washington, and Oregon.

In Armellini’s Miami warehouse, employees sort flowers received from different suppliers and assemble orders for different customers. “A typical wholesaler may buy from 30 different people, and they may get two or three boxes from each of those vendors,” Armellini explains.

On the road, two-driver teams keep flowers moving nonstop. Thanks to an honor system, those drivers can serve customers even in the middle of the night. “We go in and turn off the alarm, open their doors, put the boxes inside their coolers, put the alarm back on, shut the door, and go to the next facility,” Armellini says. A truck heading north from Florida averages 15 stops per run.

Wholesalers sell that inventory while it’s still on the truck, if they haven’t already sealed their deals in advance. “Our branches are aware of what’s incoming, and are already setting up for arrival so the flowers can be sold to our customers as soon as possible,” says Staton at Bill Doran.

The company buys a lot of its flowers directly from farms in South America but also relies on flower brokers in Miami

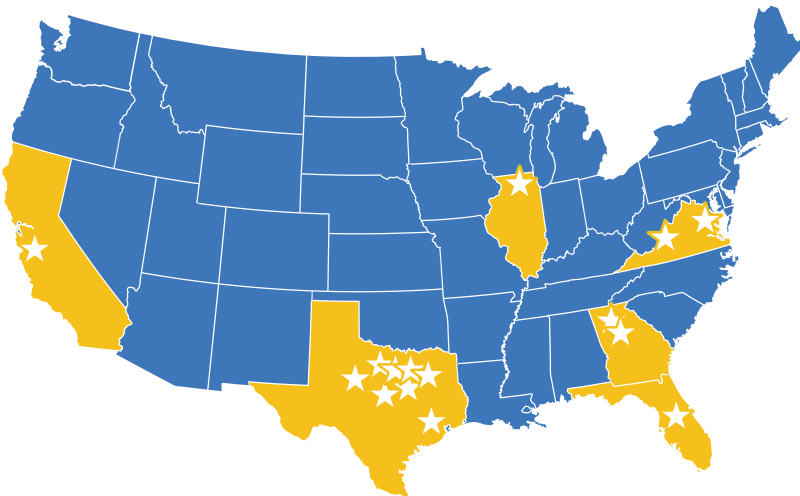
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to help meet unexpected demand. “So much of this business is last minute, and sometimes last second, that many brokers in Miami bring in product that is not presold to any wholesaler or florist, with the idea of being the last option,” Staton says.

HOLIDAY EXTRAVAGANZA

The logistics challenges grow even more intense in the lead-up to the biggest flower holidays, which in the United States are Valentine’s Day and Mother’s Day.

“Dollar-wise, Valentine’s Day is the biggest, because the product is mostly roses,” says Staton. But Mother’s Day often involves more product.

“Not everybody has a lover, but everybody has a mother,” says Cruz. At Tutuli Flower Farms, Mother’s Day pushes sales to five or six times the normal volume.

The big challenges of Valentine’s Day arise from that holiday’s focus on roses, especially red ones, and from the urgency of a one-day event, says Boldt. “On February 15, all that product is worth nothing.” Mothers are more

For the flower industry, Valentine’s Day is an urgent one-day event. On Feb. 15, the product is worth nothing.



Tutuli Flower Farms in Carlsbad, California, is a grower and shipper of assorted flowers and greenery. It processes and ships products in an area with more than 10,000 square feet of cooler space to limit contaminants and temperature leaks.

flexible than sweethearts; they don’t care if those blooms arrive a few days early or late.

To keep pace with holiday demand, players all along the supply chain scale up their operations. “At the farms, the refrigerated trucking lines have been built to handle peak capacity and then ramp down for the rest of the year,” says Staton. “Our facilities are built to handle peak capacity and then work with extra space the rest of the year, because of the importance of the holiday.”

A failed Valentine’s Day or Mother’s Day could ruin a flower wholesaler’s chance of making a profit for the entire year, he adds.

“Everybody along the chain—farms, airlines, importers, truck lines, wholesalers—has to hire extra people, facilities, and trucks,” says Boldt.

Besides calling all hands on deck, shippers can also succeed with the holiday surge by making preparations based on good business intelligence.

“After each peak holiday, including Valentine’s Day, we conduct a comprehensive review and begin the planning process for next year,” says Smith of 1-800-Flowers.com. “We also have a sophisticated supply chain with rich delivery data from our more than 40 years in the business. This allows us to effectively predict how many flowers to

order, from which farms, and where they are expected to be shipping.”

In the midst of the COVID-19 pandemic, Mother’s Day 2020 proved especially tricky. For example, the need for social distancing made it hard for florists who work with 1-800-Flowers.com to staff up for surging demand.

“We asked our customers to order early and be flexible with delivery dates—giving our local florists the opportunity to deliver their arrangements throughout the week,” says Smith. Customers responded well: 1-800-Flowers.com and its partners delivered about 21 million stems for Mother’s Day.

The pandemic pushed the whole flower industry off-center at first. Farmers were struggling in the beginning because there were no people to cut the flowers.

And in the midst of a public health emergency and economic crisis, it was hard to imagine that people would keep buying something as ephemeral as flowers.

Yet, demand has persisted. “More people are at home, and they want something nice there,” Sandoval says.

Industry players have modified their processes to fit this new situation. “Now that everything is settled,” she adds, “we’ve adjusted to the new reality.” ■

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COVID-19

SUPPLY CHAIN RESOURCES & RECOVERY STRATEGIES



POST-COVID PREDICTION

2021: THE YEAR OF ANALYTICS-DRIVEN LOGISTICS

The effect of COVID-19 on supply chain efficiency has been profound. As the demand for critical products, components, and raw materials surged, the ripple effects transformed the industry. Supply chain stakeholders must now identify, package, and deliver shipments faster, while also finding new ways to reduce cost and improve performance.

At the same time, the volume and variety of relevant data sources have grown by leaps and bounds. IoT, telematics, autonomous vehicles, and machine-to-machine communications, along with traditional systems, are creating data at an unprecedented rate. This has fostered the emergence of new analytics and artificial intelligence tools that have helped logistics professionals understand and respond to the avalanche of data.

Amid all this information, the challenge for logistics professionals is to find the needle of data in the haystack. Without faster analytics, as well as a way to separate critical data from background noise, it's impossible to find the anomalies and critical connections at the speed that modern business demands.

Fortunately, new forms of accelerated data analytics are available to solve the problem.



ships, trains, and other modes of transport, as well as connect data from one mode to another. They also make it possible to cross-reference external datasets to integrate traffic, weather, safety, and emergency information in real time.

—Todd Mostak, CEO & Co-Founder, OmniSci

These analytics platforms not only allow interrogation of billions of rows of data at the speed of human curiosity, but can be accessed via the cloud to reduce adoption cost.

Of particular relevance to logistics problems is the ability to get location intelligence from data. Advanced geospatial analytics make it possible to continually track trucks,



“ALTHOUGH WE EXPECT A CHOPPY ECONOMIC RECOVERY, THE LOGISTICS SECTOR SHOULD PERSEVERE WITH STRONG DEMAND AS WE SEE THE RECOVERY ACCELERATE FOLLOWING VACCINE DEPLOYMENT CYCLES. WITH BUSINESSES EXPECTING TO REBOUND AND LABOR MARKETS IMPROVING, THE LOGISTICS SECTOR WILL BE THE NUCLEUS OF THE GLOBAL ECONOMIC REBUILDING ENDEAVOR.”

—Greg Tuthill

Chief Commercial Officer
SeaCube Containers



SHOUT OUT

FOOD SECTOR SERVES UP SUCCESS STORY

The most successful pivot and biggest resilience story in the U.S. supply chain during COVID-19 is in the food sector.

In the spring of 2020 there was an unprecedented pivot in manufacturing, distribution, and retail from the restaurant to the grocery retail endpoints. (The air transport industry is another major success story.) Depending on whether a company primarily serviced the restaurant or grocery sectors, it either had to absorb 90%+ declines or 100%+ increases in volume in the span of a month, then pivot to realign customers with suppliers, including renegotiating freight and contracts.

In the fresh produce picking and meat processing operations, adversity was even greater due to the compounding effects of outbreaks among workers and health-related shutdowns. Despite this, we have seen relatively few food sector bankruptcies (yet) and people have been fed, with relatively little increase in cost or availability to the consumer.

The lesson learned here is that the tremendous diversity of suppliers, distributors, and retailers, along with the freedom of the private sector to rapidly shift its operations without much red tape, and the largely self-sufficient nature of the U.S. food supply, are major resilience assets.

These systemic strengths contributed to an amazingly resilient food system in the spring of 2020. This is a huge success story, and the people who made it happen deserve so much credit. We should also be on guard against private or public actions in coming years that could compromise the resilience the system has already demonstrated.

At the same time, we have been reminded of the pitfalls of just-in-time approaches. Buffers, inventories, and reserves are a valuable hedge against risk and shock to supply chains, and we should carefully consider where in the supply chain we need to accept the cost of carrying increased inventories and stockpiles—and who should pay for that.

Failure to adequately protect worker health and safety—especially in this case farm and food worker health—has shown itself to be a major threat to our national food security, and this also needs focused attention and improvement from both private and public players. While there are some lessons to learn from this hard year, we should not lose sight of the main lesson: Our food system and the people who run it have proven extremely effective and resilient under the stress.

—Dr. Benjamin Ruddell

• Professor and Director, School of Informatics,
Computing and Cyber Systems, Northern Arizona University

• Director, FEWSION Project, a national supply chain mapping and analysis science project, funded by the National Science Foundation and operated out of Northern Arizona University



RECOVERY STRATEGY

THREE MUST-HAVES FOR A POST-COVID COMEBACK

COVID-accelerated e-commerce presents considerable challenges for supply chain operations. With door-step delivery, buy-online-pickup-in-store, curbside pickup, and traditional retail store fulfillment, logistics managers must consider how to stock for multiple delivery points. While increasing safety stock levels is one solution to avoid out-of-stocks, it can erode profits. Retailers should focus on the following:

1 Boost inventory transparency. To keep up with e-commerce growth, retailers need to know where an item is throughout the supply chain at any time. With RFID technology, they can run stock queries based on real-time item visibility and accurate item counts.

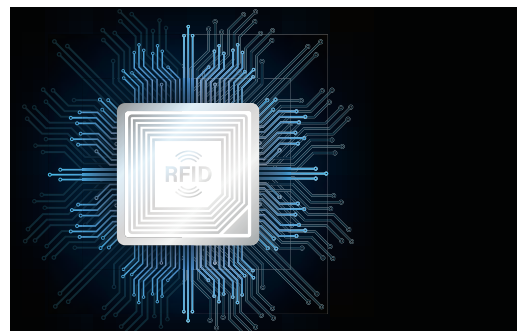
Using radio transmission, as opposed to barcode line of sight, RFID sensors gather individual data from multiple items that may be packed inside boxes. The ability to read individual item signatures in milliseconds reduces errors in the count and enables the system to produce real-time stock queries by location.

2 Get help from artificial intelligence. AI plays a crucial role in supply chain management, taking over the heavy lifting and repetitive tasks that are often done manually. AI can offer recommendations on how and what can be improved to boost supply chain speed and efficiency, while also considering cost-effectiveness.

AI can be linked to RFID data and automatically create orders for stock replenishment. RFID compares the on-shelf items to the store merchandising plan. AI can display alerts for missing items and identify what needs to be replaced, down to color, size, and count. By integrating AI into the supply chain, businesses can better plan for demand peaks and improve performance.

3 Improve 5G reliability. Getting a reliable WiFi connection in a warehouse can be challenging. 5G provides high bandwidth and low latency features, offering a unified platform for multiple device connectivity. Not only is it 1,000 times faster than 4G, it can also handle 10,000 times more traffic. This enables employees to track the global movement of goods in real time, while significantly increasing speed and productivity.

—Philip Calderbank
RFID Consultant, BSN





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RECOVERY STRATEGY

RE-IMAGINING WAREHOUSE LOGISTICS AMID GLOBAL DISRUPTION

With online sales surging, the demand for warehouse space is exponentially increasing as organizations look for larger fulfillment centers to store their products. This shift has significantly impacted the real estate market, as e-commerce retailers demand three times more physical space than brick-and-mortar stores.

These pandemic-spurred changes have forced organizations to rethink how they approach using warehouse space.

A CONVOLUTED ECONOMIC CLIMATE

The current economic climate forces organizations to reconsider their investment in all the spaces of their business, and warehouse space must be a key consideration.

With increased uncertainty around supply chains, forecasting appropriate inventory levels and corresponding warehouse needs has quickly become both more complex and business-critical. Using the right advanced technology can lend a hand to organizations seeking assistance in re-imagining warehouse logistics.

TECHNOLOGY IN THE WAREHOUSE SPACE

To navigate the unpredictability we currently face, organizations need tools that not only take a more in-depth look across historical data in the entire supply and demand ecosystem, but also help with evaluating the complex “what-if” scenarios.



Leveraging technology, supply chain decision-makers can gain greater insights on how to optimize warehouse space.

Automation. Deploying automation capabilities allows organizations to rapidly scale up or down, dependent on buyer demand, providing warehouses with greater flexibility to accommodate an influx of products.

Internet of Things (IoT).

Inventory management in warehouses has dramatically improved with the use of IoT devices to track and analyze the movement of goods in real time—allowing for greater visibility into how much warehouse space is needed to store products.

Machine learning and AI. Artificial intelligence has improved forecasting and planning for manufacturers as they navigate unique buyer behavior related to the pandemic. With accurate forecasting abilities, supply chain speed and accuracy improve, and organizations can be more cost-efficient when looking at other manufacturing logistics.

SCALING TO DEMAND

By deploying these technologies, organizations can make more informed warehousing decisions by gaining a holistic view of cyclical sale patterns—along with how these have changed over the past six months. This allows them to better understand where to build up inventory or scale down, as well as provides greater visibility into inventory levels and upcoming product expiration dates.

With this information, senior leaders can make assessments that more accurately project a company’s future warehousing needs within today’s changing world, and help avoid any knee-jerk reactions that may hold back future ambitions.

—Mike Edgett
Product Marketing Director
Sage



POST-COVID PREDICTION

MICROFULFILLMENT IS HERE TO STAY

Companies like Walmart and Target have deployed microfulfillment centers by bringing the warehouse to the consumer and optimizing contactless pickup.

More businesses are adopting this system, implementing fully automated contactless customer pickup logistics systems that work with shippers to provide pickup optimization for big and bulky goods such as building supplies and appliances, to integrate a safe and seamless customer pickup experience at warehouse and store locations.

The pandemic has reinforced the importance of customer experience and rewarded creative ways to ensure needs are met, even when they change rapidly. We’ll see this new strategy implemented for years to come.

—Satish Natarajan
CEO and Co-founder
DispatchTrack

**“COVID ACCELERATED THE
ROLE OF TECHNOLOGY IN
SUPPLY CHAINS—WHAT
WE THOUGHT WAS ON THE
HORIZON FOR 2025 WILL BE
IMPLEMENTED IN 2021.”**

—Ryan Yost
VP/General Manager,
Printer Solutions Division
Avery Dennison Corporation



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RECOVERY STRATEGY

BUILD STRONGER RELATIONSHIPS AND ACQUIRE BETTER DATA

The COVID-19 pandemic sparked economic unpredictability and volatility. U.S. freight capacity suddenly increased alongside shutdowns and stay-at-home orders. Then, capacity tightened again as industries such as automotive rebounded and consumer demand for certain products rose.

The misalignment between freight and carrier capacity pushed shippers into the spot market more than we normally see, and brokerage became a more central method for moving goods.

Reliance on brokers and the spot market remains high, but maintaining this trend over time will continue to cost shippers millions. With variable rates running 30 cents per mile higher than contracted rates, costs add up quickly across billions of annual freight movements.

Brokerage is helpful on volatile shipments and under tight deadlines, but using their services conceals underlying data that could benefit shippers and carriers.

Without direct access to who is moving freight,

and when, it's impossible to recognize when patterns emerge. This is especially true when brokerage matches freight with small- and mid-sized carriers that are an ideal network fit, but typically fly under the radar for shippers in their RFP.

Two key recovery strategies for shippers are to rebuild carrier networks with flexibility and to broaden their access to a wider transportation dataset.

1. Diversify your carrier network for improved agility. Rather than using brokerage or the spot market as a long-term solution, shippers should identify smaller carriers that fill gaps in their routing guide. Shippers can refocus network strategies around contracted freight and pursue direct relationships with carriers, then actively monitor and amend those agreements.

This avoids unnecessarily paying brokers for connecting carriers with freight, so they stand to make more money. It's also ideal for shippers because they avoid brokerage premiums while gaining transparency into how freight is being moved. This creates much stronger partnerships.

There will always be times when turning to the spot market and relying on trustworthy brokers is necessary, but a balanced carrier portfolio gives shippers flexibility.

2. Get insight from data outside your network. Another limiting factor is shippers' limited access to data from only their own transportation networks. This provides an incomplete picture of what's happening across the wider industry.

When you make procurement decisions based only on your own network, it's easy to lose sight of the variability that is created by your peers, third parties, and thousands of carriers. What you see in your own data may or may not be reflective of reality.

In uncertain times, looking at the freight movements happening around you informs better decision making by clarifying what is happening now and what could happen next in the freight market.

—Heather Mueller
Supply Chain COO
Breakthrough



"BY BROADENING SUPPLIER BREADTH, COMPANIES CAN SIGNIFICANTLY REDUCE THE IMPACT OF UNFORESEEN CIRCUMSTANCES—AND BY DOING SO, THEY'LL BE MORE PREPARED FOR THE NEXT BIG RISK."

—Emma Vas
Director, Product Marketing
Epicor Software

"IT'S ALL ABOUT THE DATA IN 2021. ACCURATE AND DETAILED CUSTOMER DATA IS CRITICAL TO OPTIMIZE THE SUPPLY CHAIN."

—Matthew Fumeaux
Director,
Location Intelligence
Loqate





POST-COVID PREDICTION

COVID-19 REDEFINES SUPPLY CHAIN PARTNERSHIPS

While we have experienced observable changes like e-commerce acceleration, we've also seen some less obvious shifts following COVID-19. Mainly, there is now an increased emphasis on companies looking to their transportation and distribution providers to create value that transcends traditional cost-based decision making.

VALUE CREATION

Performance will surpass cost as the number one factor in maintaining successful relationships with logistics providers. Labor shortages and a shift toward quality and stability will result in a reevaluation of lean supply chains.

The extreme disruptions experienced in 2020 will shift C-level perception of their supply chain functions from cost centers to value creators. With organizations willing to pay for quality service and reliable capacity, shippers will increasingly demand flexible solutions from providers.

Data and solutions design capabilities will play an increasingly important role in differentiating the

financially healthy and growing carriers/3PLs from the rest of the pack. Providers will accelerate sustainability initiatives as shippers look to partner with organizations that value and focus on people and the environment.

Shippers will increasingly contract with providers that offer a partnership approach vs. the more traditional procurement sourcing model of price-driven RFPs.

Logistics organizations that foster trusting relationships by offering innovative solutions, non-biased feedback, and excellent operational performance will thrive.

To someone outside our industry, these ideas make common sense, but for years shippers and non-asset 3PLs have focused their efforts primarily on reducing costs in traditionally siloed transportation and operations functions, often at the expense of stability and resilience.

COVID-19 caused triggering cracks to form in what executives assumed were strong transportation and distribution networks.

Going forward, we will experience greater collaboration between shippers and carriers, with providers that offer solution design expertise uncovering cost savings opportunities, while also helping organizations build more resilient networks to protect supply chains from future disruptions.

These partnerships will become more prevalent between shippers and asset-based providers, as asset-based carriers back up their design solutions with contractual commitments and capital investment, and as a result have more skin in the game.

CULTURE SHIFT

2020 was a challenging year for the supply chain. However, through all the challenges, a culture of true partnership is emerging. Shippers are moving beyond simply looking at the cheapest option when choosing a transportation and logistics partner, and instead, are focused on finding true partners they can rely on for increased stability and resiliency. By forming these

deeper partnerships, carriers and shippers are able to collaborate and critically examine operations to find places to reduce costs across the board.

—Frank Granieri, COO,
Supply Chain Solutions
A. Duie Pyle

“COVID EXPOSED AN IMBALANCE IN THE RELATIONSHIP BETWEEN BUYERS AND SUPPLIERS. AS BUYERS FOCUS ON BUILDING RESILIENCE TO FUTURE SHOCKS, WE NEED TO EQUIP SUPPLIERS TO COME WITH THEM ON THAT JOURNEY. TECHNOLOGY CAN HELP TO ADDRESS THIS CHALLENGE, UNLOCKING FASTER, MORE PREDICTABLE CASH FLOW, BETTER ACCESS FOR DIVERSE SUPPLIERS, AND INCREASED OPTIONALITY IN THE EVENT OF DISRUPTION. WHAT'S GOOD FOR SUPPLIERS IS GOOD FOR BUYERS.”

—Christian Lanng,
CEO, Tradeshift



RECOVERY STRATEGY

STRENGTHENING SUPPLY CHAINS FOR TEMPERATURE-CONTROLLED VACCINE DISTRIBUTION



During the height of pandemic disruptions, most supply chains bent, but they did not break. Planning, collaboration, and flexibility proved paramount. Supply chain and logistics experts are using the additional knowledge gained over the past year to help ensure safe, efficient delivery of vaccines.

One big hurdle is the vaccine's temperature-control requirements, which can be especially challenging for four reasons:

1. Transport, packaging, and facilities need to be temperature-controlled and monitored, and stability data regarding effective temperature ranges need to be followed.

2. There are limits to the amount of dry ice allowed on aircraft and potential re-icing during transport requires specific accoutrements/apparel and safety protocols.

3. Last-mile efforts are vital to ensure vaccine delivery and replenishment for a network of vaccination sites, including remote locations.

4. These facilities are highly regulated. They cannot be built just anywhere at any time. They have to be licensed, inspected, and adhere to specific standards and regulations. This can take time.

Fortunately, these are not insurmountable challenges. For instance, one vaccine manufacturer developed specialized packaging to hold dry ice. It also opted for a more direct distribution model—mainly using express carriers—to minimize any risk that temperatures are compromised in transit.

As for other models, such as delivering vaccines to warehouses where they are broken down and delivered to the point of

care, manufacturers will rely on partners like 3PLs that have specialized capabilities and capacity—or the ability to add it at short notice. In developed markets, there is generally sufficient capacity in place. Certain 3PLs can supplement capacity with additional certified cold chain capacity quickly as vaccines come online.

With regard to last-mile delivery, the networks of the integrators will play a crucial role, particularly in emerging markets. There is also an important role to be played by 3PLs, as they support allocation and capacity planning, scheduling, routing, monitoring, and exceptions management.

Thanks to new visibility tools and increased data exchange with pharmaceutical companies that emerged during the pandemic, 3PLs are able to

track shipments and take action to ensure on-time, secure delivery like never before. It is a great example of how management of data flows in logistics can be just as important as physically enabling the flow of the product.

The amount of activity, cooperation, and coordination occurring is historic. Many supply chain and logistics leaders are focused on helping get vaccines into the hands of healthcare professionals as soon and effectively as possible. It is a great opportunity for our entire industry to step up and demonstrate the value we deliver—usually behind the scenes—for our customers and society at large.

—Scott Cubbler
President, Life Sciences
& Healthcare
DHL Supply Chain,
North America



POST-COVID PREDICTION

THREE TRENDS IN THE NEW NORMAL

- 1 **The concept of “peak” may no longer be tied solely to the holiday season.** COVID-19 brought record-breaking, peak-level demands to retailers at various points throughout 2020, forcing their warehouses to be prepared for any and everything and questioning the idea of a single peak season.

While holidays will always remain one of the busiest times for retailers, it's likely we'll begin seeing more demand-generation events throughout the year to bring in profit that has previously only been attainable during the final months of the year.

- 2 **“Concierge” fulfillment will begin to emerge over the next several years.**

The pandemic increased consumer interest in e-commerce, BOPIS, and BOPAC, changing the way retailers think about their commerce strategies. Retailers can no longer just focus on improving one of those forms of fulfillment, but must look at all of them (in addition to in-person fulfillment) to create a cohesive strategy in which customers experience the same level of service, regardless of the way they shop.

Once this strategy is executed successfully through proper supply chain and warehouse tracking, retailers can begin looking toward more “concierge” fulfillment efforts like deliver-to-trunk or deliver-to-garage strategies.

- 3 **We will see a greater democratization of fulfillment.**

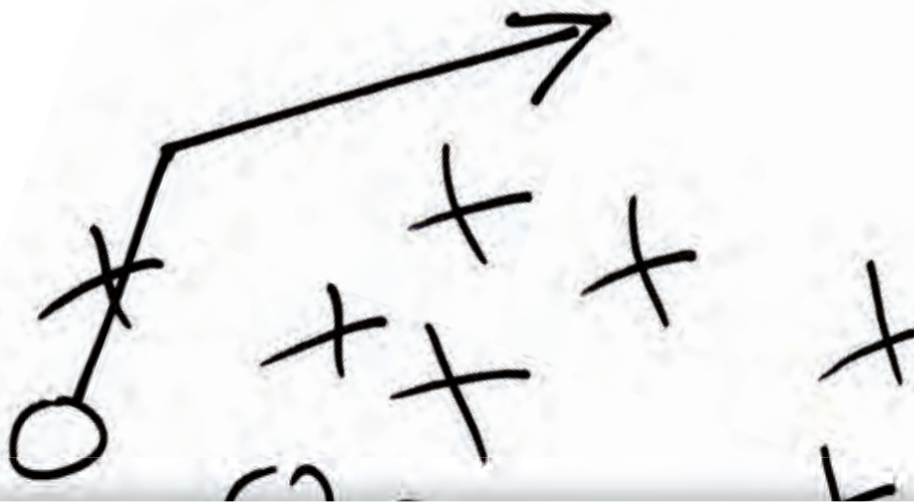
Consumer demand during the pandemic gave independent 3PLs and fulfillment centers the ability to step up and prove themselves as viable options. Retailers are turning to other fulfillment networks to deliver on fast fulfillment because industry leaders failed them.

We will continue to see more vendors working together to create access to flexible, affordable fulfillment automation solutions that empower brands of all sizes to more easily scale operations and meet customer expectations, without an outsized price tag.

—Guy Courtin, Head of Global
Alliances, 6 River Systems

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SHOUT OUT

COLLABORATING WITH COMPETITORS: GROCERY SECTOR HAS IT IN THE BAG

Grocery stores worked swiftly to address the challenges brought on by COVID restrictions, adjusting their approach to managing inventory, stocking shelves, and servicing customers.

Working to balance the uncertainty of the supply with the increase in demand, grocery stores re-examined their lean supply chain strategy. Across the board, they promptly worked with their logistics partners to implement a collaborative effort, aligning supply strategies with demand requirements.

As the direct point of contact for the consumer, grocery stores took a leadership position in collaborating with supply chain stakeholders to ensure high-demand items were at the right place at the right time. This cooperative effort was a carefully orchestrated symphony of moving parts from manufacturing, to delivery, to placing the goods on the shelves.

In addition to working in tandem with the supply chain community, grocery stores worked with their local communities to create a safe shopping experience. Many stores implemented one-way shopping aisles, sanitizing protocols, and plexi-glass barriers, and allowed a reduced number of people in the store. They also introduced or enhanced the option of online ordering and curbside, contactless pickup.

One key takeaway for the industry is that we need to build supply chains as well as business models that are designed to be agile and flexible, bending as the challenges and opportunities present themselves.

The grocery store sector's ability and openness to working cooperatively with its supply chain partners should be considered one of the greatest examples of collaboration between manufacturers, motor carriers, and retailers, which will have both short-term and long-term impact on all parties. We, as an industry, need to work toward building a stronger supply chain, comprised of collaborative partnerships.

The value of the concept of collaborating with competitors in the name of supply chain fluidity was brought to life by the grocery store sector and its logistics partners.

—Mike Wilson
CEO

Consolidated Chassis Management



RECOVERY STRATEGY

PRIORITIZE SUPPLY CHAIN STRATEGY TO CONTROL COSTS

Post-pandemic planning requires you to assess potential risks that exist and plan alternative ways to respond to evolving demands. Proper contingency planning today positions you for growth tomorrow. Consider these tips to maintain customer service levels while controlling costs.

Be prepared to adjust. Even in typical years, budget planning requires some guesswork. As consumer behaviors and disruptions rapidly evolve, the forecasting game has become significantly more challenging. Since costs can be a moving target, scarce resources and funds must consistently flow to the most valuable business outcomes.

Use supply chain resources. Determining the corporate impact of plans produced by other organizational departments reveals the levers that affect cost and service. Third-party logistics providers possess analytical capabilities to construct a global picture of the organization's total business from a data perspective.

Always be a partner. When a supply chain succeeds, all those involved will succeed. A supply chain partner with a continuous improvement mindset will uncover ongoing opportunities across your network. This added visibility allows you to be a better partner to your domestic and foreign vendors. With the right knowledge, you can accurately and openly communicate sales information, time-in-transit data, and other key performance indicators. Enhanced transparency fosters better relationships.

Evaluate and modify. Aggressively evaluate your entire supply chain and take an open-minded approach to the long-term structure. Does your supply chain strategy align with your corporate strategy? Are you leveraging analytical tools and supply chain expertise to monitor your strategy? Maybe you are getting your products out the door, but are you making money? Constant evaluation and adjustment are key.

Look internally. Examine internal processes and systems. Balancing resiliency and efficiency, supply chain leaders will secure their networks. The past year reminded us of the importance of agility. You must be ready to shift rapidly, yet balance service and cost to protect profitability.

—John Richardson
Vice President, Supply Chain Consulting
Transportation Insight

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RECOVERY STRATEGY

HOW TO OVERCOME HURDLES AND BUILD RESILIENCY

Future-looking supply chains need to combine digitization, optimization, and diversification to incorporate the level of resilience necessary now and into the future. Here are key strategies to build greater resilience into the supply chain:

Diversify your supply. Now is the time to re-evaluate supply chain geographies and look to diversify supply. This means a combination of international and domestic sourcing options. According to McKinsey, this trend started pre-COVID, but not as a means to mitigate risk. Instead, it improved speed to end consumers, which is a critical value proposition. At the same time, supply diversification has been shown to build resiliency and minimize the impact of disruption.

For example, by diversifying its supply chains in North America, Europe, and Asia, Toyota was in a very different position in 2016 when an earthquake hit Japan than it was during the 2011 Fukushima disaster when the company produced all parts in Japan. It averted worldwide downtime in 2016.

Prioritize digital tools for greater visibility. The ability to improve supply chain operations hinges on end-to-end visibility. ERP systems, transportation management systems, warehouse management systems, and manufacturing execution systems have allowed organizations over the past decade to create a plethora of unstructured data. This data is at their disposal to drive better insights, visibility, and predictions across the supply chain.

This data can inform necessary facets that will aid in recovery and create transparency, allowing them to estimate available inventory, determine realistic final-customer demand, secure logistics and distribution capacity, and maximize the management of cash flow and working capital.

The ability to aggregate disparate data from different supply chain segments then synergize it into a clear view isn't new to supply chain management. But the pandemic has accelerated this trend.

Nike, for instance, pulled off a pivot during COVID-19 and is an example of how digitization pays off in the long term. A McKinsey podcast shared how Nike was able to mitigate the impact of China-based operations when COVID hit because of its investment in a digital platform linked to its contracted manufacturer. The platform provided an understanding of where goods were in its supply chain. As a result, Nike was able to see the products on hand and re-route the goods toward e-commerce fulfillment centers rather than brick-and-mortar stores. In conjunction, the company shifted its marketing strategy to focus on available inventory rather than planned goods.

Continue to optimize and innovate. Supply chain leaders need to keep their eye on the big picture, future landscapes, and immediate optimizations. The pandemic response was reactive in many ways because strong disaster recovery plans were not in place. It opened our eyes to over-dependencies, workflows that need immediate changes, and opportunities to speed up innovation.

The trend toward direct-to-consumer technologies was amplified in 2020 as online shopping accelerated at lightning speed, and consumer preferences and shopping behaviors shifted. Consumer goods manufacturers and retailers need to rethink operations, build closer ties, and become better equipped to transform capabilities.

Continued optimization and advancement of new opportunities can help decrease human dependency and move supply chains from reactive to responsive as innovative capabilities better equip them today and against future market disruption.

—Doug Mefford
Product Marketing Manager
Generix Group North America

“LOGISTICS PROVIDERS WILL NEED TO BE COGNIZANT OF PROJECTIONS BY VACCINE MANUFACTURERS OF THE AVAILABLE SUPPLY TO ALIGN THE DISTRIBUTION CAPACITY TO MATCH BOTH DEMAND AND SUPPLY.”

—Dr. Madhav Durbha
Vice President, Supply Chain Strategy
LLamasoft, a Coupa company



RECOVERY STRATEGY

ENABLE YOUR WORKFORCE WITH AI AND LOW-CODE SOLUTIONS

The consumerization of artificial intelligence technologies has empowered everyday knowledge workers to be able to use intelligent software to complete content-centric tasks. There are now no-code and low-code solutions that can be plugged into automation platforms to train and enable digital workers with cognitive skills to read, understand, and make decisions specific to various roles from customs forms, invoices, delivery receipts, waybills, and more. AI- and machine learning-based applications can help eliminate labor-intensive, error-prone processes associated with many supply chain processes and documentation.

—Bruce Orcutt, SVP, Product Marketing, ABBYY

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RECOVERY STRATEGY

GAINING VISIBILITY INTO INVENTORY

Successful retailers have pivoted to prioritizing internal visibility. True visibility into inventory location and fleet availability is what lets shippers activate the appropriate shipping options during the checkout experience.

For example, many retailers don't have the ability to show a specific store's inventory, and they may only be able to offer same-day delivery if orders are shipped from stores. So they can't offer that service reliably for their e-commerce site.

Retailers who can unlock store-specific inventory will be able to offer shorter timeframes for shipping.

One of the pivots that's becoming more common with larger shippers is moving from an internal, first-party fleet to orchestrating delivery through multiple logistics service providers. This is a more demand-driven approach that lets shippers be elastic in responding to surges and falls in demand over time or across different locations or regions. This allows shippers to better control the consignee experience and ensure specific SLAs are met, and deliveries are on time.

—Nick Schurman
Director of Sales, Brigg



POST-COVID PREDICTION

SCALING ON-DEMAND

The impact of COVID-19 on the supply chain and the world underscores the importance of collaboration among colleagues, partners, and customers. The on-demand needs of current supply chains will lead to an increase in digital supply chain platforms. These platforms will enable companies to scale up or down based on demand. This will be made possible by large networks of carrier partners across all modes of transportation providing intelligence in real time.

A digitally empowered adaptive/flexible responsive logistics platform that leverages a global carrier network will enable companies to quickly move to alternate suppliers in other regions when needed and provide better data across multiple resources.

—Glenn Jones, GVP Products
Blume Global



POST-COVID PREDICTION

INTELLIGENT SORTATION RE-ENVISIONS THE LAST MILE

As B2B operations shift to direct-to-consumer processes, warehouses are doing less bulk shipping to stores and more individual shipping to residences. This huge increase in parcel volume puts more focus on the role of the last mile. End-to-end supply chain transparency will enable the last mile to meet the future.

AN RFID SOLUTION

More supply chain leaders are adopting a total RFID solution as a means to optimize supply chains and provide end-to-end transparency for each parcel: its location, its contents, its destination, and when it is expected. Automated data-driven approaches in the supply chain are essential to keeping goods moving quickly and accurately.



From manufacturing to end destination, RFID will enable supply chains to meet the rising demands of post-COVID e-commerce. A total RFID solution has the capability to maintain intelligence as well as interpret it throughout the supply chain. Moreover, RFID can enable additional functionalities—specifically intelligent automated sorting in the last mile.

The fundamental element for intelligent sorting is having meaningful data enabled by RFID at the parcel level, partnered with AI. In what may well be its most significant benefit, applying RFID technology to intelligent sorting is the next iteration of a total RFID solution. Ultimately, the flexible capability offered by

RFID and intelligent sorting in last-mile fulfillment will allow a more strategic allocation of human resources as well as a significant increase in the speed, accuracy, and volume of parcels to flow through the facility, loaded for final delivery.

—Ryan Yost, VP/General Manager, Printer Solutions Division
Avery Dennison Corporation



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3

UNDERREPORTED TRENDS THAT WILL ACCELERATE RESHORING

Thomas research shows an increase in the number of manufacturers that want to bring production back to the United States. These trends will help you capitalize on that opportunity.

BY TONY UPHOFF, PRESIDENT & CEO, THOMAS



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MADE IN INDIA

MADE IN USA

MADE IN CHINA

MADE IN MEXICO

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INO

Thomas has been tracking supply chain shifts since the pandemic began, and our data shows that the increased interest in reshoring is actually accelerating.

The statistics are significant, too: In February 2020, 54% of Thomasnet survey respondents said they wanted to bring production back to North America, but as of July, 69% were actively looking to do so. That's a 15% leap.

However, according to the July 2020 Thomas Manufacturing Index (TMX), which measures industrial activity based on first-party data from the tens of thousands of interactions that occur daily on Thomasnet.com, there's a critical gap in industrial production in North America despite stock market gains.

"We are noticing a new equilibrium whereby industrial production is resuming, but at a much lower level than pre-crisis," says Dr. Hamid Benbrahim, head of data for Thomas.

Manufacturers do feel confident in the future, though. Among the industry professionals responding to Thomas' recent survey, 91% say they believe manufacturing in North America will recover from the COVID-19 pandemic.

Here are three trends Thomas is tracking that will help manufacturers speed up their reshoring efforts.



In an era in which we've seen Boeing build the largest warehouse in the world, it may come as a shock to learn that demand for smaller warehouses is actually higher than demand for larger-sized ones. If you follow real estate, you know that rental rates for smaller units have increased two times that of units larger than 120,000 square feet.

It might look worrying that warehouses are downsizing, suggesting that companies are decreasing inventory. But there's no cause for alarm. What's happening is that while downsizing the square footage of individual warehouses, companies are simultaneously increasing the number of warehouses they own and use.

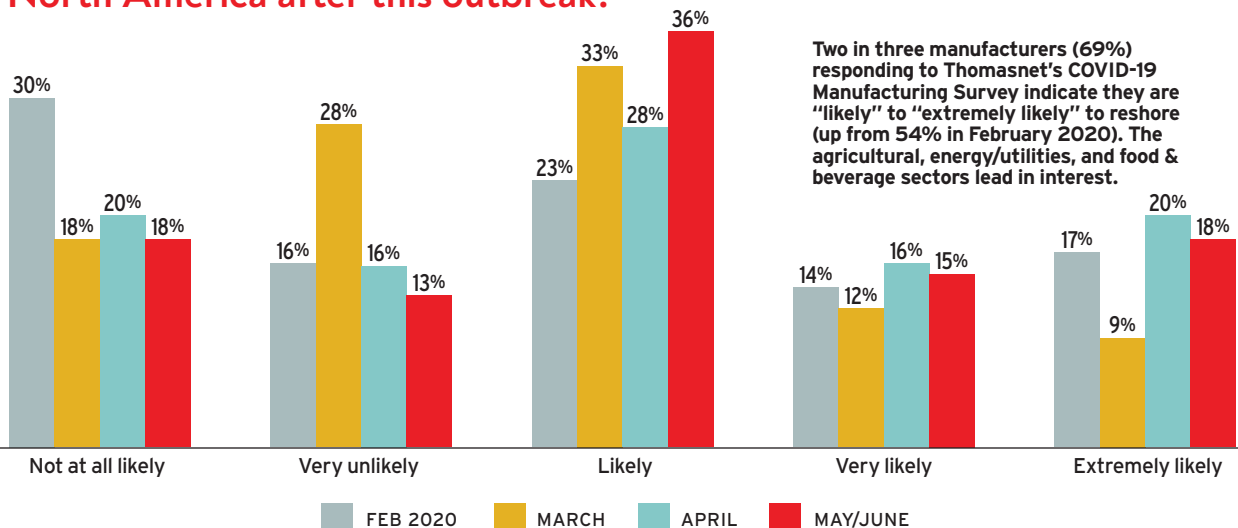
With the new standard of same-day delivery established by Amazon Prime, e-commerce and brick-and-mortar retailers are discovering that local warehouses, even if they are smaller, are more efficient in meeting the needs of customers. Bottlenecks in the supply chain during the pandemic underscored this.

Walmart actually earned more than its competitor Amazon during the pandemic, in part because it was able to use its 24,000 stores as mini fulfillment centers. These thousands of stores are spread throughout the country, which means that online orders can generally be shipped closer to where the customer is than if Walmart was exclusively shipping from just a handful of large warehouses.

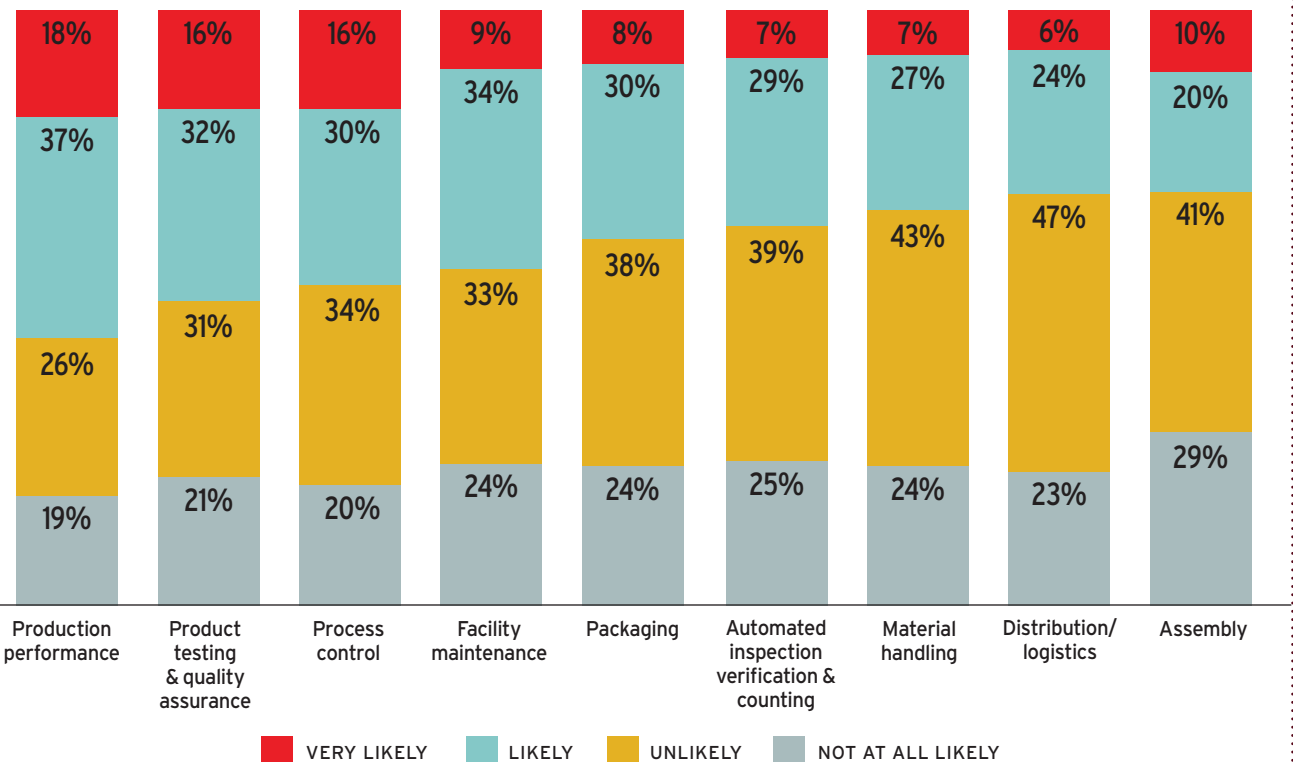
The closer the fulfillment center is to a customer, the faster it will reach the customer—thereby improving customer satisfaction.

For another interesting case study, look to clothing retailer Zara, which was founded in Spain and now operates stores in nearly 100 countries. The fast-fashion retailer sets fashion trends by being able to change its offerings almost five times faster than its competitors.

How likely are you to bring more production/sourcing back to North America after this outbreak?



Technologies manufacturers are most interested in investing in

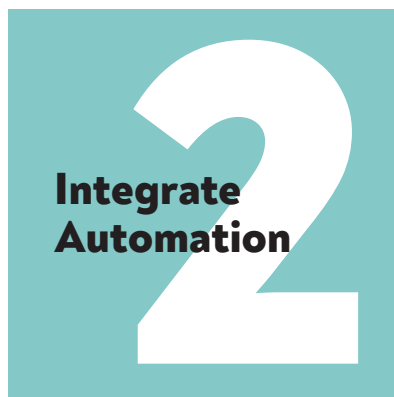


The brand's secret? It brings a significant portion of production in-house.

Zara's investment in manufacturing clothing in-house reduces lead times, thereby maintaining the popular chain's ability to be on the cutting edge of the fashion industry. Keep in mind, too, that we're not just talking about the speed at which goods move from one part of the supply chain to the next—vertical integration improves controls and communication from the outset.

It's worth noting that there is a drawback for smaller, in-house manufacturing companies that use just-in-time production. To ensure fast turnarounds, materials will likely need to be sourced in bulk well before new designs are created. If you produce customized or highly individualistic goods that require a wider variety of supplies, this may not be the best option for you.

However, a savvy business could still stay competitive by taking a hybrid approach.



More than half of the manufacturing companies surveyed report that they meet or exceed the industry standard for automation, establishing a demand for automation and for further innovation and implementation. As automation continues to gain traction, industry needs to be proactive. The top three automation technologies that manufacturers are most interested to invest in during the next 12 months are production performance, product testing and quality assurance, and process control.

As the pandemic forced many businesses to temporarily close, work with fewer staff members, or require employees to work remotely, we saw that companies with the strongest technical capabilities held a strong advantage over their competitors.

Of the companies surveyed, 55% say that within 12 months they're "very likely" to invest in production performance automation. Half of the companies report they're already at the industry standard for automation.

Automation is not only about being able to continue to work during a crisis, but also about working smarter year round.

Manufacturers should continue to invest in technology right now. I believe now more than ever that this is the year that Industry 4.0 becomes more fully realized.

Offer Apprenticeships & Mentorship Programs

Despite the spike in unemployment due to the pandemic, certain industries actually saw an uptick in their businesses. The manufacturing sector fared well in comparison to some other industries, as many manufacturing companies were deemed essential and some pivoted their factories to create critical PPE.

We're excited that more than one-quarter of the companies we surveyed are actively hiring right now.

As much as we want to bring jobs back to the United States, we have to face the stark reality that for a long time, manufacturing has suffered from an image problem. As a consequence, with fewer people entering the sector,

there is a significant skills gap. Last year, a startling half a million jobs in manufacturing were left unfilled. If we don't do something to reverse this now, \$454 billion in production will be at risk by 2028, according to Deloitte.

I recently spoke with Mary Person, the director of governmental relations and external affairs for FH Paschen. She remarked that enduring stereotypes about construction and other industry jobs often deter women from pursuing those roles. Only 29% of the manufacturing industry comprises women, according to the 2016 census.

Person suggests mentorship as a way to recruit more women and close the skills gap, and I fully agree with her. Both formal and informal mentorships are a great way to build up the next generation.

I had a similar conversation about the stereotypes and misconceptions held about the industry with Ralf Weiser, vice president of operations at Alexanderwerk. He offered another practical solution: apprenticeships.

Apprenticeships are a win-win solution. Generally lasting between one and six years, these formal programs mix hands-on experience, classroom

teaching, and mentorship. Apprentices get paid to be trained and mentored by those actively working in the industry, and companies get to mold apprentices into their dream workers.

More than half of the 26% of companies we surveyed that run apprenticeship programs continued to run them effectively through COVID-19. Perhaps more prescient, though, is the fact that the industries that have been running apprenticeships were not as affected by skilled labor shortages.

During a recent White House roundtable on trends in U.S. manufacturing, a participant asked me if the thousands of jobs open in the manufacturing sector were blue-collar jobs or white-collar jobs. I explained that they're neither—they're new-collar jobs.

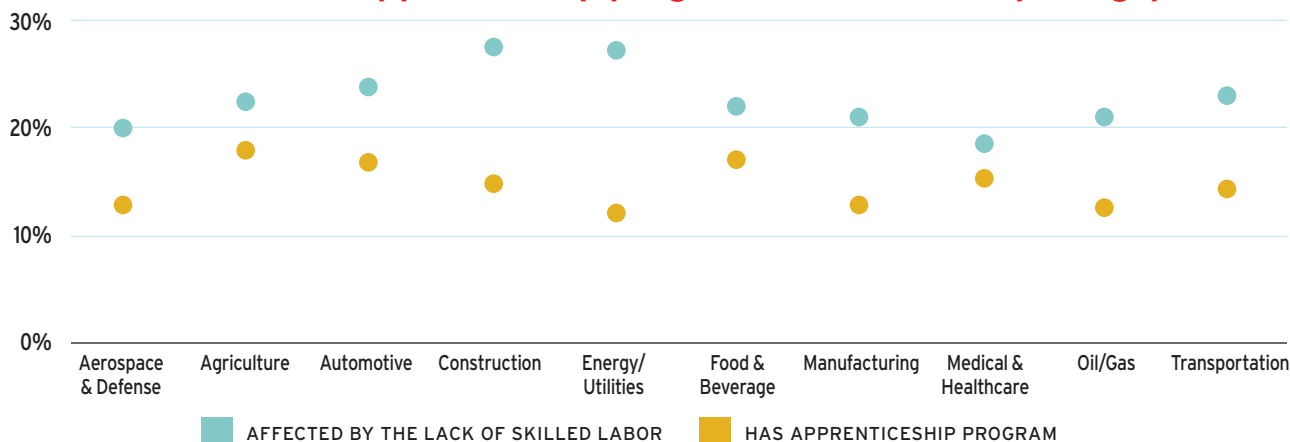
The term accurately reflects the balance between traditional manufacturing skill sets and innovative, tech-driven education. It's a new and exciting field driven by America's great history of manufacturing as well as by today's Industry 4.0 innovations.

OPPORTUNITY ABOUNDS

The manufacturing field is ripe with opportunity. By investing in people, technology, and infrastructure and reimagining what American manufacturing could look like, we can accelerate reshoring and bring manufacturing back. ■

Of the surveyed companies, 26% have apprenticeship programs in place. More than half of those programs were unaffected by the pandemic. And, industries that have adopted more apprenticeship programs were overall less impacted by the lack of skilled labor available. With one in three companies reporting that they are actively hiring, apprenticeships could be part of the solution for the skills gap crisis and help accelerate innovative reshoring efforts.

Industries with apprenticeship programs less affected by skill gap



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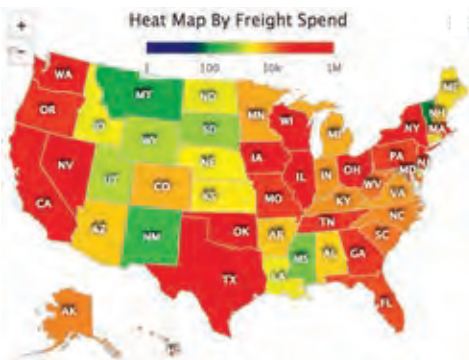
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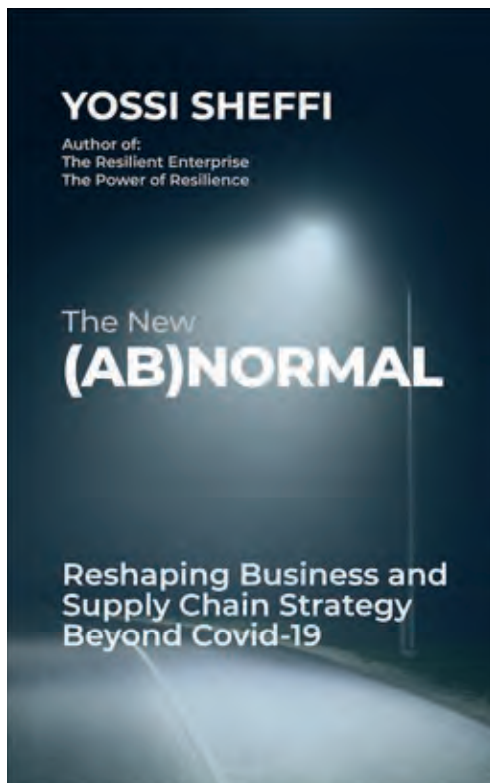
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The New (Ab)Normal

Reshaping Business and Supply Chain Strategy Beyond COVID-19 BY YOSSI SHEFFI



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WHAT BUSINESSES HAVE DONE DURING THE CHAOS OF THE PANDEMIC, AND WHAT THEY ARE LIKELY TO DO IN THE COMING MONTHS AND YEARS TO ENSURE THEY SURVIVE THE VIRUS AND THRIVE AFTERWARD.

Much has been written about the personal stories of COVID-19 victims, how scientists raced to understand and treat the disease, and how governments did (or did not) take steps to protect their citizens. Less has been written about the impact of COVID-19 on the fabric of the global economy and how companies had to rapidly and radically change their operations in the face of disrupted supply, hoarding, government mandates, and the desperate need for medical supplies.

COVID-19 made clear we cannot simply turn off the economy and all shelter in place. Someone somewhere must still make and deliver the daily necessities (and luxuries) of life. Someone somewhere must still make and deliver the huge volumes of healthcare-related supplies required to treat the sick and prevent the uncontrolled spread of the disease. Civilization depends on supply chains to convert the bounty of the planet into the products we need and then deliver those products to 7.8 billion human beings at a price they can afford. When a virus, a government edict, or a recession hits hard, it tests the people and processes that keep the physical side of civilization running.

MANAGING FOR WHACK-A-MOLE SUPPLY

In the ongoing pandemic and post-pandemic worlds, suppliers may fail to handle orders for many reasons. A new cluster of infections in a supplier's facility or community might force a closure. Financial damage to the supplier—especially if the supplier depends on heavily impacted industries such as tourism, hospitality, or commercial

aircraft manufacturing—might cause bankruptcy. And, of course, the world's usual disruptions in the form of typhoons, earthquakes, floods, and other natural disasters continue whether there's a pandemic or not.

"We experience new headwinds every day," said Darius Adamczyk, chairman and CEO of Honeywell. "But we continue to monitor our supply chain, work closely with our suppliers, and respond swiftly when new challenges arise." Managing the risk that supply won't meet demand depends on a combination of planning, monitoring, and reaction.

PREPARE FOR DISRUPTIONS

Before companies can prepare effectively, they need to understand the risk landscape. That means classifying potential disruptions according to how likely they are to occur and, if they do occur, how damaging can they be. These dimensions help prioritize the risks.

A third classification dimension is how quickly can risks be spotted, which helps the company think about monitoring systems and the required timelines for response to different threats.

Companies can then prepare for supply disruptions in several ways:

1. Build in redundancy. Supply chain redundancy mainly involves extra inventory and multi-sourcing, which aren't without their own downsides. Extra inventory is expensive as it incurs

inventory holding costs. Worse, it may affect product quality in that workers may find it easy to "take one from the pile" when encountering a damaged part or product rather than fix any underlying cause.

This insight was one of the roots of Toyota's original success in building affordable, high-quality cars. Multiple suppliers mean that the company is less of an important customer to any one supplier, and its volume with each is low, leading to higher costs.

In addition, the greater the number of suppliers, the higher the risk that one of them may become involved in a social justice or environmental breach, dragging down the company's reputation and sales.

2. Build in flexibility. Flexibility involves several elements, including:

- Cross-training employees so they can be moved around to places where they are needed.
- Standardizing parts and products so that they are interchangeable.
- Postponement, or late customization, which involves delaying the time when products are committed to a certain product variant or customer.
- A flexibility culture.

A corporate culture of flexibility has several distinguishing characteristics: a norm of speaking the truth to higher-ups freely; letting the people closest to the problem make decisions when there is no time for hierarchical approval

processes; and allowing deference to expertise rather than corporate rank during a disruption.

Companies that are good at responding to disruptions are typically organizations that are disrupted frequently and cognizant of risks, such as the military, airlines, and high-risk operations like nuclear or chemical plants.

3. Develop early detection

capabilities. One of the most effective ways to understand overall risk exposure and enable early warning is to know all the locations of suppliers' facilities that make all the parts that go into the company's products and which customers buy products that use these parts.

Armed with such a map, a company can pinpoint where natural disasters or a COVID-19 outbreak is taking place, and decide which of its parts supply, product deliveries, and customers will be affected. However, creating supply mapping is not something that can be done in the heat of the moment.

WHERE ARE THE SUPPLIERS?

In 2005, Bindiya Vakil got her master's degree in supply chain management from the MIT Center for Transportation & Logistics. She joined Cisco in Silicon Valley, where her experience with several supply chain disruptions over five years showed her that companies did not know where their suppliers' facilities were.

In an interview, she explained, "The address we had was a corporate office or their 'ship from' location, not the plant where the items were made."

Getting that supplier factory location data for every part from every supplier is laborious for both the company and its suppliers. For example, Cisco had more than 1,000 suppliers, including four large contract manufacturers, and purchased 50,000 types of parts going into more than 12,000 products in over 200 product families.

Many of Cisco's suppliers were also large companies such as Flex, which had more than 100 manufacturing locations around the world and 16,000 suppliers of its own. Staff at Cisco would need



COVID-19, financial damage, natural disasters, and other headwinds can make supply management feel like a game of whack-a-mole.



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FIG 1

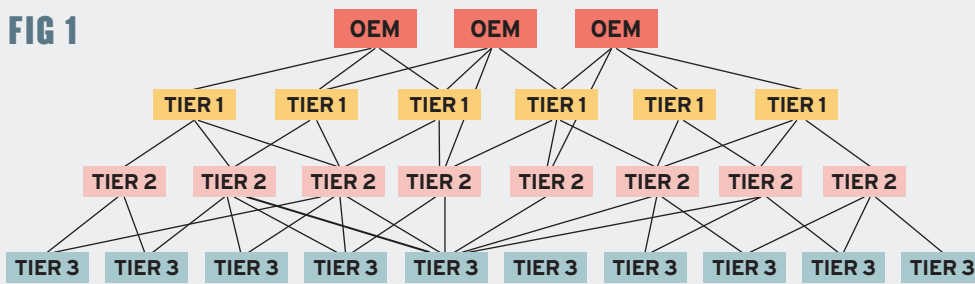


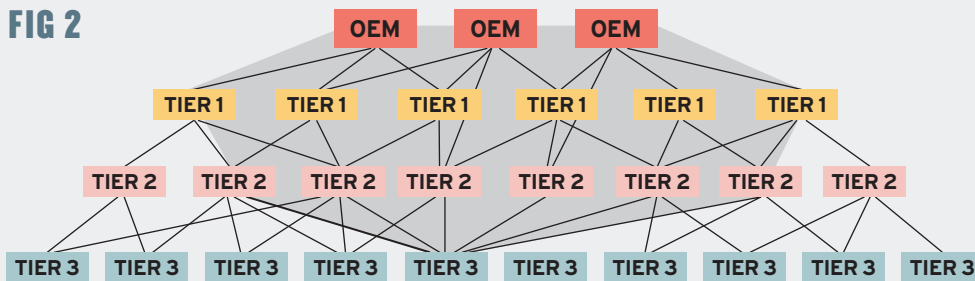
FIGURE 1: AN INDUSTRY SUPPLY CHAIN SCHEMA

This schema depicts an industry's overall supply chain with three OEMs drawing on a deep pyramid of tiers of suppliers.

FIGURE 2: A DIAMOND SUPPLY CHAIN SCHEMA

Unbeknown to the OEM, many of its deep-tier suppliers may rely on a single supplier. In other words, instead of a broad pyramid industry supply chain structure as shown in Figure 1, the supply chain structure looks more like a diamond in this case.

FIG 2



to contact each supplier and ask where it made each part, while staff at all the suppliers would need to track down all that location data for all the parts they sold to Cisco.

If many companies tried to map their supply chains, then suppliers would be inundated by requests for location data from all their customers.

Vakil understood that for cost-effective mapping of supply chains involving multiple companies and multiple suppliers, the information “needs to be flowing through a single platform.” A third-party service provider could get much of the data once from each supplier and amortize the information collection costs over multiple customer companies.

MAPPING AND MONITORING

Vakil left Cisco and founded Resilinc in 2010, with the goal of mapping and monitoring all of the facilities of a company and its suppliers.

For industries in which a mapping company such as Resilinc has documented the supply chains of a few original equipment manufacturers (OEMs), mapping a new OEM is relatively quick because companies in the same industry often use many of the same suppliers.

Vakil explained the leverage a single platform offers: “Supplier A could sell

five parts that are made at three sites to customer X and 25 parts made at all 80 sites to customer Y. Each customer will get that tailored view. But to the supplier, it’s less work because they had to do this work once, and the system parses the data intelligently to 50 customers over time.”

The next step in this exercise is to cross-reference the bills of materials (BOMs) of the company’s products with the suppliers’ locations that make each part to identify which products and how much revenue are at risk in the event of a disruption at a given supplier location.

Finally, combining this product risk data with customer order data allows the company to determine which customers might be affected by a disruption at that supplier location. This data is then combined with a global alert system, so that when a supplier location experiences a disruption, the company can know immediately which products will be in short supply, which customers may be affected, and how much revenue is at risk.

RISKY DIAMONDS AND CLUSTERS

When people who are not supply chain experts think about a company’s suppliers, they typically think of its direct suppliers: those who send material to the company and get paid by it. These are known as the company’s Tier 1 suppliers.

Note that each of a company’s Tier 1 suppliers has its own suppliers—they are the company’s Tier 2 suppliers. The Tier 2 suppliers have their suppliers, who are the first company’s Tier 3 suppliers, and so on. Like a big family tree, a supply chain extends all the way back to the raw materials suppliers, such as the farmers who grow food or miners who extract ore.

In a given industry, the competing OEMs often share suppliers, although each OEM might have some unique Tier 1 suppliers, too (see Figure 1).

Typically, companies don’t know who their deep-tier suppliers are. Direct suppliers tend to be reticent about their own suppliers, because they consider it proprietary information that is part of their competitive advantage.

Lack of visibility into the deeper tiers leads companies to encourage (or require) that their suppliers manage their own supplier risks and develop business continuity protocols. A March–April 2020 survey of senior supply chain executives by the World Economic Forum found that 53% of companies were supporting suppliers with analysis on their COVID-19 risks in order to mitigate the risks for these suppliers.

COVID-19 also provided an added impetus for many companies to diversify their supply sources by adding second and third suppliers for a given part or

service. An April 2020 PwC survey of U.S. CFOs found that 56% of companies were planning to develop additional alternate supplier options.

Sometimes, however, multi-sourcing doesn't reduce the risk because of two supply chain phenomena that create hidden risks in the supply chain, especially the deeper tiers.

The first issue is that, unbeknown to the OEM, many of its deep-tier suppliers may rely on a single supplier. In other words, instead of a broad pyramid industry supply chain structure as shown in Figure 1, the supply chain structure looks more like a diamond in this case, as shown in **Figure 2**.

The problem of the diamond structure can be seen in the example of the Evonik disruption. In March 2012, an explosion and devastating fire destroyed an Evonik chemical factory in Marl, Germany. The factory made cyclododecatriene (CDT), a clear liquid that smells like turpentine. Chemical manufacturers use CDT to make cyclododecane and then lauro lactam.

None of these three obscure chemicals are in the BOMs of any car, which may be why car makers were initially unaware of the event.

However, plastics manufacturers use lauro lactam to make polyamide-12, also known as PA-12, a tough plastic used to make strong, lightweight parts. PA-12 helps car makers reduce the weight of vehicles to meet green goals for fuel economy. At the time, cars averaged 46 pounds of PA-12 and related nylons scattered across dozens or hundreds of different parts (tubing, gears, housings, and more) made by many different suppliers.

That one Evonik factory had been responsible for about 40% of the world's supply of CDT; the loss of the factory severely curtailed supplies of PA-12 to all the makers of parts made from PA-12.

The accident almost brought the entire automobile industry to its knees. Only quick collaboration among eight competing automakers and 50 suppliers helped the industry avoid a significant disruption.

A second category of deep-tier risk comes from an economic phenomenon known as industrial clusters, in which many companies and suppliers in a particular industry co-locate to be near each other in order to take advantage of a talent pool, natural resources, knowledge exchange, or government support.

Examples include Detroit for automobiles, Silicon Valley for chips, and Hollywood for movies.

Clusters are a favorite strategy of government economic development efforts, because once clusters reach a certain scale, they foster a natural positive feedback loop. As they grow, they become more attractive to more industry players, and their rate of growth accelerates. Thus, governments only have to "prime the pump" to achieve economic development.

Moreover, clusters attract investment in related infrastructure and education, making the cluster renowned for its signature product.

While clusters can create a competitive advantage, they also create a concentration of geographical supply chain risk. For example, in 2011, floods

affect all suppliers in a given industry. Reacting ahead of competitors may be the difference between a successful response and a failed one.

One of the important initiatives a company has to focus on is monitoring and sensing the health of its suppliers. In fact, the April 2020 PwC survey of CFOs in the United States found that 54% of companies were planning to gauge the financial and operational health of suppliers as a result of COVID-19.

Companies monitor the health of their suppliers via special services (such as Dun & Bradstreet for public companies), banking relationships, news media, social media, and information collected by local tiger teams. They watch for layoffs, scandals, morale problems, turmoil in upper management, and financial troubles. Even something as simple as a dirty or messy factory can signal a potential problem.

In many cases, suppliers' operational hiccups (e.g., product defects, late deliveries, incomplete orders) signify that management is preoccupied by issues other than customer service. During the pandemic, supplier monitoring included

“ SUPPLY CHAIN MANAGERS WHO PREVIOUSLY FOCUSED THEIR ATTENTION ONE OR TWO LEVELS DOWN INTO THEIR SUPPLY CHAINS WILL HAVE TO DEVELOP THE SYSTEMS AND DISCIPLINE TO TRACK EVEN MORE DEEPLY INTO THE CHAIN. ”

—Stephen Kaufman, senior lecturer of business administration, Harvard Business School

in Thailand disrupted 35% of the entire hard disk industry. Four of the five top suppliers of drives all had facilities or key suppliers clustered in Thailand. The shortage of hard disks prevented PC makers from fulfilling demand.

MONITORING THE SUPPLY CHAIN

Early detection of a disruption and recognition of its implications allow a company to find alternative supply sources, alert customers, change manufacturing plans, and, in general, be proactive.

This is particularly important as disruptions, such as COVID-19, may

assessment of the infection risks associated with a supplier's HR practices that might force a facility shutdown, as happened in a number of meatpacking plants in the United States, Germany, and elsewhere.

A variety of third-party news filtering services can help gather, curate, collate, and prioritize new events from around the world. In the case of COVID-19-related disruptions, daily data on new infections and government-published criteria for economic reopening or closing can help judge the risks of the infection affecting suppliers. Superimposed on a supply chain

map with all the company's BOMs, risks to products and revenues can be assessed quickly.

A key part of the monitoring process is assessing, filtering, and prioritizing the never-ending stream of bad news to decide which events can be ignored, investigated, or deftly handled with a minor tweak; and which events require alarm bells and all hands on deck.

MITIGATING IMPACTS

As was the case during the 2008 financial crisis, the COVID-19 crisis made companies worry about the financial health of their suppliers. In early 2020, many took steps to support smaller, more vulnerable suppliers.

For example, defense contractor Lockheed Martin advanced more than \$50 million to small- and medium-size enterprises in its supply chain. Telecom company Vodafone committed to paying its European suppliers within 15 days (down from the standard 30- to 60-day payment terms).

The World Economic Forum survey showed that such practices were quite common. Indeed, 49% of companies were guaranteeing purchase of supplies, 46% were paying suppliers in advance, and 40% were paying suppliers a premium to offset the costs of additional precautions imposed during COVID-19. A scant 1% of companies surveyed were taking no actions to mitigate the immediate impact of the pandemic on suppliers.

RAPID REACTION

As demand for granola bars surged among panicked consumers hoarding for a pandemic Armageddon, General Mills was shocked to learn in late March that a supplier wouldn't be able deliver cranberries for a week.

"Within 24 hours, we were able to get a new supplier qualified and new product in," said John Church, the top supply chain and logistics executive at the company. Granola bar production never ceased.

As the example shows, once a company spots a problem, it can react



By investing in efforts to gain visibility into how consumers use its products, Procter & Gamble knows that people aren't just buying more Tide detergent to hoard it; they really are doing more loads of laundry during the pandemic.

with urgency before customers are affected. That rapid reaction can include accelerating the deliveries of inventories throughout the supply chain, finding and contracting for materials from alternative suppliers, and securing logistics capacity as needed to manage the disruption.

Redundancy provides the first line of defense in any disruption. For example, Hershey built inventory in anticipation of COVID-19's effects.

"As the situation began to unfold," said Michele Buck, CEO at the chocolate maker, "we built inventory in both raw materials and finished goods to mitigate risk and to help us to continue meeting demand."

Even without disruptions, and despite companies' focus on lean management principles, inventory kept in various tiers of the supply chain (including in transit) can provide a buffer of days, weeks, or even months.

The other element of redundancy is multi-sourcing. However, many companies found that their sources were concentrated in certain hard-hit areas and thus had to quickly seek alternative suppliers in less-affected regions. This involved determining capacity, validating quality, and quickly negotiating delivery contracts.

A frantic search for additional supplies during a disruption comes with additional risks: counterfeit or substandard parts from unknown suppliers. In March 2020, the Netherlands recalled 600,000 defective

N95 masks it had bought from a Chinese supplier. The Centers for Disease Control and Prevention in the United States even created a web page depicting dozens of different kinds of counterfeit N95 respirators that buyers needed to avoid.

Desperation is the mortal enemy of prudence and the best buddy of avarice.

Disruptions also often require additional transportation capacity; for instance, to move inventory ahead of a regional COVID-19 shutdown or approaching hurricane; move parts from alternative suppliers; redistribute finished goods to fulfill demand; or bring recovery supplies (e.g., PPE) to the disrupted area.

Often, these shipments must be expedited to help accelerate recovery or prevent late deliveries to customers. Thus, rapid reactions to a disruption entail quickly arranging rapid transportation.

Reacting with urgency helps in any large-scale disruption such as COVID-19 that hits multiple companies in an affected region at the same time. As each impacted company seeks resources, those companies with faster reflexes have a better chance of securing all they need and can recover faster than the laggards.

Finally, in situations where supply simply cannot meet total demand, companies have no choice but to deliver less total product than customers would wish for or would have ordered.

Between the deep uncertainties wrought by the pandemic and the inability to travel or even go to the

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office, companies and managers sought understanding—and, in particular, visibility—into what was taking place throughout their global supply chains, and some semblance of control through data. Where is the shipment? When will the part be in stock again? How much product does the customer really need? Is the quality of a new supplier as good as they claim? Can the supplier make the quantity it promised by the deadline?

In the computer era, data has always been a source of competitive advantage. With COVID-19-imposed restrictions on in-person gatherings, data and its analysis became even more important. People needed to know what was really happening in the supply chain to separate fact from fiction and fear from reality. More broadly, the trend toward more data from more parts of the supply chain is a trend toward more control of the supply chain through digital technologies.

Those technologies also enable contact-free operations—reducing the need for workers to touch potentially infectious surfaces or come close to other workers. Importantly, the technologies create data streams that enable process improvements.

BETTER SHIPMENT VISIBILITY

Express parcel carriers like UPS and FedEx pride themselves on offering almost real-time shipment movement visibility for shippers and consignees. By scanning every package at handover points along the journey, these carriers can show the customer the progress of their shipment at certain intervals.

Unfortunately, the workaday world of larger shipments of ordinary goods moving between commercial enterprises does not provide such simple visibility. Whereas UPS, for example, has direct end-to-end control of almost all of the facilities, conveyances, and people involved in transporting a parcel, the same cannot be said for most freight shipments, especially in global trade.

For global trade, each shipment typically involves a series of independent

truck, rail, and ocean movements managed by both independent carriers and intermediaries. Moreover, shipments might sit for a time in the no-man's-land of a port's container yard awaiting customs approval or pickup for the next leg of the journey.

“ TECHNOLOGY AND DIGITALIZATION ENABLE END-TO-END VISIBILITY ACROSS THE SUPPLY CHAIN. HAVING THIS VISIBILITY—IDEALLY IN REAL TIME—IS KEY TO PROACTIVELY RUN RISK ANALYSES AND REACT FAST WHEN A CRISIS HITS. ”

—Joachim Christ, head of procurement, Merck

The result is that most businesses cannot track a shipment seamlessly from an overseas factory to its destination.

Shippers (the beneficial owners of the cargo, like manufacturers, retailers, distributors, and hospitals) and carriers (the owners and operators of transportation assets) are working on improving visibility in transportation using technology. Smartphones put an internet-connected optical code scanner, machine vision camera, and GPS locator in every pocket. As shipments get scanned, images get processed, and conveyance location positioning gets updated. The data can be used for near-real-time shipment location information and stored for later analysis.

Companies store more and more such data in the cloud, where users anywhere can find relevant data sets and related specialized applications. These visibility applications are typically part of event management systems designed to alert companies to deviations from the normal (or planned) patterns of shipments and movements.

In the broader world of supply chains, technology adoption faces a special challenge. Unlike the situation with the integrated carriers (UPS, FedEx, DHL, TNT, and postal services), shipment visibility—even just from a factory in Asia to a retailer in the United States—requires more than just one company to have the needed sensors and other hardware and software

to achieve continuous visibility into goods' flows.

Supply chain visibility also needs all (or at least enough) participants to adopt compatible technology and agree on a set of standards so that they can all use the data.

Many companies have not mapped their inbound supply chains and may not even know the physical locations of their direct (Tier 1) suppliers' manufacturing and distribution facilities.

However, what supply chain and material handling managers really want is more than just visibility of the inbound shipment from Tier 1 suppliers into their facility. They would like to know as early as possible if there is a problem—late shipment, quality issues, shipment damage, customs delays—anywhere in the supply chain, so they have time to react. For this to happen, they need visibility beyond their Tier 1 suppliers into deeper tiers of their supply chain (recall Figure 1).

Visibility into deeper tiers of the supply chain is a perennial challenge that, as yet, almost no manufacturer or retailer has cracked. The reasons for this are not so much technological (even though conflicting standards and non-cooperating software platforms do not help). Rather, most companies do not know who their deep-tier suppliers are.

Tier 1 suppliers consider the identity of their suppliers (who are Tier 2 suppliers to the OEM) a trade secret. And even in cases where an OEM can identify its deep-tier suppliers, it has no leverage over these suppliers and cannot compel them to share data, because the OEM itself is not a customer of these deep-tier suppliers.

Furthermore, parts made by deep-tier suppliers may end up at higher-tier

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suppliers, serving not only many companies but also multiple industries. As a result, it can be impossible for an OEM to pinpoint deep-tier suppliers that make specific parts.

Other companies are using more technology to gain visibility on the retail and consumer ends. For example, while many companies are wondering what panicked consumers are doing with all the products they bought during COVID-19 hoarding, Procter & Gamble knows.

The company knows that people aren't just buying more product such as Tide detergent in order to hoard it; they really are doing more loads of laundry during the pandemic. P&G gets this insight from data collected directly from the washing machines of a select sample of consumers.

P&G has long invested in efforts to gain more visibility into how consumers use its products. Its marketing mantra is grounded in two "moments of truth" for products. The first moment is when a consumer chooses a product in the retail environment from among the competing products. The second is when the consumer actually uses the product. P&G monitors the first moment of truth through interviews, Nielsen data, and point-of-sale data.

Previously, P&G would ask select consumers to keep diaries of their experiences using its products in order to understand the second moment of truth, but technology now enables a paperless process.

The P&G example illustrates another trend accelerated by COVID-19. This kind of seamless, contactless digital data collection is enabled by the Internet of Things (IoT), which combines specialized sensors, low-cost computer chips, and ubiquitous wireless networking such as home WiFi or cellular phone networks.

These technologies are becoming more sophisticated and less expensive, leading to the presence of sensors everywhere to measure, gather, and transmit data continuously to analysts and managers who can act on it.

TACKLING THE VISIBILITY CHALLENGE

Every automobile has an average of 30,000 parts made by thousands of component suppliers scattered across the globe. The parts flow from these suppliers into automotive assembly plants using every mode of transportation and hundreds of transportation carriers.

To coordinate the flow of parts, material handling managers need to know when those parts are going to arrive at the plant. In fact, they often need these arrivals to be prescheduled in order

an automotive manager could look up any SKU number and find where all those in-transit parts were at any given time.

For example, some may be on a truck at the plant's yard waiting to be unloaded, others may be several hours away on a truck heading to the plant, still others may be on a railcar several days away, and even others may be offloading at a port.

In all cases, FreightVerify gathers the data on the location of the parts (and the specific trailers, railcars, vessels, airplanes, and the containers these

“ WHY DO A LAUNDRY DIARY STUDY WHEN YOU CAN PUT A DEVICE ON SOMEBODY'S WASHER AND DRYER THAT TELLS YOU EXACTLY WHEN THEY'RE DOING LAUNDRY, HOW MANY LOADS, AND WHAT TYPE OF LOADS? ”

—Michael Lancor, director of consumer fundamentals and insights, Procter & Gamble

to manage the dock doors where the incoming trucks unload the shipments.

While carriers serving commercial enterprises can give shippers an estimated time of arrival of their vehicles to a plant, a store, a warehouse, or a hospital, this does not address the needs of transportation and material handling managers. What they really need to know is when particular parts needed to make particular products at a particular time will arrive. For this, they need to know which parts are loaded on each of the hundreds of trucks, railcars, ocean vessels, or airplanes transporting those parts.

In 2014, former Ford material handling manager and serial entrepreneur Lorne Darnell launched FreightVerify Inc. to tackle the challenge of merging the carriers' information (about the location of their conveyances) with suppliers' data (about the contents of their shipments) and cross-linking these data to the shippers' SKU numbering schemas.

He started by focusing on some of the most daunting inbound transportation challenges—those of the automotive industry. By 2017, the company was offering a cloud-based platform on which

parts are in) and transmits it directly and frequently from the vehicle to its platform for the receiving plant to see.

In addition to providing key information such as the location of the part number and the vehicle carrying it, the software provides a very accurate estimated time of arrival, accounting for road congestion, weather delays, highway construction, border crossing problems, and so forth. Each shipment movement is based on a plan that the platform follows in real time, noting any deviation, since many of the loads follow complex routes involving multiple stops and relays.

Naturally, companies also use the platform as a source of business intelligence, to evaluate carrier performance, and to identify long-term bottlenecks. In 2019, General Motors adopted the software for all movements into its assembly plants as well as for tracking finished vehicle deliveries and aftermarket parts. Ford followed suit, and FreightVerify began serving other automotive companies and then other manufacturers—and even hospitals.

As the pandemic was creating havoc in the reliability of transportation movement, such shipment visibility

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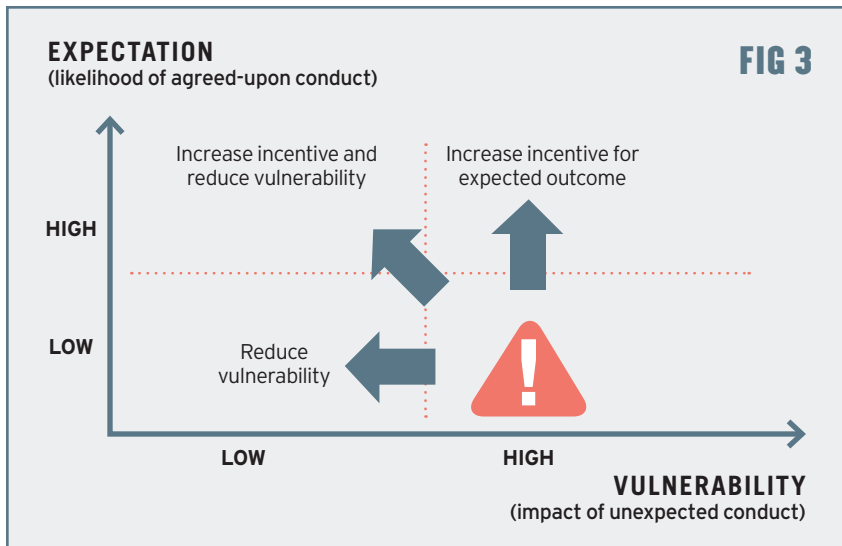


FIGURE 3: VULNERABILITY AND EXPECTATIONS OF TRUST

The riskiest quadrant is where vulnerability is high and there is little expectation that the counterparty will fulfill its obligations and abide by the agreement (Low Expectation/High Vulnerability).

became more important than ever. Furthermore, going forward, such capabilities allow companies to improve service while cutting costs.

FORMULA FOR PREPAREDNESS

Supply chain problems such as supplier product fraud or customers gaming order allocation systems mean that to be relevant, supply chain visibility requires transparency on the part of supply chain partners. That is, suppliers and customers must be willing to share timely and accurate data with partner companies.

Transparency on the part of suppliers means sharing essential data on their capacities, sourcing of key materials, and deeper-tier suppliers that might affect the supplier's ability to deliver quality and quantity on time.

Transparency on the part of customers means sharing downstream inventory and sales patterns so the supplier can plan its production.

Transparency enables cost-effective resilience. Correcting for unplanned situations requires physical resources in the form of both redundancy and flexibility of assets, labor, and processes. The ability to deal with unplanned events also depends to a large extent on the amount of forewarning—the time lag between receiving data about a disruption and the impact of that

disruption. Such a lag can be used to redirect shipments, find alternative sources of supply, release inventories, alert customers, and more. Without it, a company will have to keep redundant capacity and large inventories in order to avoid stock-outs, production disruptions, backordering, or worse: lost customers. Transparency provides greater forewarning.

In essence, transparency and visibility provide the eyes, ears, and nose for the supply chain while physical resources provide the muscles. The brains of the organization then connect the sensory apparatus of transparency to the muscles of resilience. Those brains include both people and technology.

BUILDING TRUST

Transparency requires trust—a company must be willing to share some of its sensitive data with its key trading partners. During a crisis, the bond of trust between buyers and sellers is typically put to the test. A definition of trust is “the willingness to accept vulnerability based on positive expectations of the intentions or behavior of the counter party.”

Per this definition, **Figure 3** illustrates the two dimensions of trust: expectation of outcomes and vulnerability. The riskiest quadrant is where vulnerability is high and there is little expectation that

the counterparty will fulfill its obligations and abide by the agreement (Low Expectation/High Vulnerability).

INCREASING TRUST

The two principal ways to increase trust are either to increase the incentives for a good expected outcome or to reduce the vulnerability (or both). A company can increase the likelihood of getting what it needs from a supplier by offering higher payments for better performance, penalizing underperformance, or promising the potential for growing future volumes of business.

It can also reduce its vulnerability by having multiple sources of supply or redundant inventory to cover shortfalls from an untrustworthy supplier.

Trust in suppliers can be especially challenging for companies engaged in e-commerce on sprawling multi-supplier platforms such as Etsy (which lets artisans sell direct to consumers). Customers need confidence in product descriptions and supplier reliability.

Suppliers can mitigate trust issues by asking for upfront payment. An early payment reduces the supplier's risk, especially if the payment covers the raw material cost and the work. An early payment also creates an incentive for the customer to follow through with the order, since it has already paid for it (in full or in part).

In a crisis, parties can get away with not fulfilling obligations by, for example, shipping subpar products, not paying on time (or at all), or canceling orders and leaving suppliers stuck with sizable raw material inventory. The crisis provides a ready excuse for nonperformance, including invoking force majeure clauses. It also creates many opportunities for one-time deals where there are no ongoing relationships and, therefore, lower incentives to deliver the expected outcome.

In contrast, during day-to-day business, these risks are limited because trading between the supplier and customer is ongoing, and neither side desires to cause a breakup in the relationship.

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VALUE-ADDED RELATIONSHIPS

One of the results of the coronavirus crisis is that companies have gained a deeper appreciation of the importance of trust built over a long period.

As Lynn Torrel, chief procurement and supply chain officer at the giant contract manufacturer Flex, explained, “We’ve had a few escalation calls with suppliers, and you get on a call and there are critical needs. Often, it’s someone I’ve known for many years. We had a hard negotiation and then had a really good dinner and spent time together, and we’re always seeing each other at different events. I think that personal side is important, especially the relationships and trust that build over time.”

The existence of trust in supply chain relationships means that a customer does not have to pay extra or look for new suppliers to reduce its vulnerability in a crisis. And suppliers will not have to raise their prices or demand early payments to cover a nonpayment risk.

Such relationship building can be even more important when business contacts are based in faraway countries. Trust is key to overcoming cultural, geographic, and language differences between trading partners. The value of personal relationships in creating trust may be difficult to build through video calls. As a result, businesspeople will still have to board airplanes, stay in hotels, and share meals with distant suppliers and customers to continue building the personal relationships that create trust.

However, in today’s COVID-19 world, remotely gathered digital data and virtual meetings are here to stay and can replace some of the time-wasting business travel and in-person gatherings that plague many workplaces and business-to-business relations. Online collaboration platforms will continue to improve, as will people’s ability to use virtual meeting places to transact business and carry out day-to-day managerial tasks.

But there is still no substitute for personal contact when it comes to building business relationships, and this is unlikely to change in the foreseeable future.



As demand for granola bars surged among panicked consumers hoarding for a pandemic Armageddon, General Mills discovered that a supplier wouldn’t be able to deliver cranberries for one week. Thanks to supply flexibility, however, the company was able to qualify a new supplier and receive new product within 24 hours. Granola bar production never ceased.

HANDS-OFF HAND-OFFS

COVID-19 pushed small shippers and the 3.5 million truckers in the United States to look for ways to eliminate paperwork.

Before COVID-19, people thought nothing of touching a keypad, signing in on a clipboard, or handing a credit card to a cashier. The fact that the SARS-CoV-2 virus can survive on surfaces for hours (sometimes days) applies pressure on supply chains to go paperless and, even further, contactless.

Although supply chains do use a lot of electronic communications and documentation, some steps still require paper documents, especially in transportation and import/export transactions. Both of these activities involve legal or government documents, such as purchase orders and bills of lading, that must be scrutinized and signed by different parties as the goods travel.

One key example of supply chain documentation that is still often maintained in paper form is the bill of lading, which is the legal record of the traded goods. It goes with every shipment and must be signed by the carrier’s driver (in triplicate) and the consignee (after comparing the information on the bill of lading to the information in the purchase order).

After many years of running 21st century companies with 19th century

technology (bills of lading actually originated in the 16th century), almost every loading dock, warehouse, and logistics management office is looking to replace paper documents with digital versions.

Part of the challenge to going fully paperless (and contactless) is universal adoption of standardized electronic document systems among all the parties. At the very least, this involves the supplier, the carrier(s), the consignee, and government authorities.

For international shipments, the parties can also include banks, multiple carriers, and various government bodies such as customs, export control, import inspections, and others at both ends of the trip.

To be digital, all of these parties must be able to access the right documents, enter data into them, be able to provide legally binding signatures, and yet not be able to tamper with the underlying information in the document. Such a system must be fully secure in order to manage trillions of dollars in trade and be acceptable to competing parties and all participating governments.

One approach, being developed and tested by various companies, uses the blockchain technologies popularized by cryptocurrencies (such as Bitcoin) to create a secure, tamper-resistant, distributed database. Blockchain-based



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ABOUT THE AUTHOR

Professor Yossi Sheffi is Director, MIT Center for Transportation and Logistics; Elisha Gray II Professor of Engineering Systems; Professor, MIT Civil and Environmental Engineering; and Professor, MIT Institute of Data Science and Society. He is an expert in systems optimization, risk analysis, and supply chain management.

systems do not require a central managing authority and can ensure the integrity of the transactions without it.

Another typical supply chain activity that requires hands-on, in-person interaction happens as companies work with suppliers to develop, refine, and manufacture new products. Representatives of the customer and supplier fly to present product designs, review materials, and assess manufacturing samples. COVID-19 brought an instant end to that travel and even made express-air shipments of samples an expensive and unreliable process.

Though the trend of virtual product development existed before COVID-19, the pandemic greatly accelerated its rise. Instead of travel and express parcels, virtual product development uses instantly delivered digital files, 3D models, and high-resolution video for collaboration.

Even before the pandemic, some companies (especially those in apparel) had been adopting virtual product development for speed: the shorter the development time, the

better the company can handle fickle market trends.

Digital design processes enable around-the-world, 24-hour, rapid development—an Asian supplier or innovation center can work during their day (overnight for U.S. headquarters) on a new product and send the digital results for early morning review at headquarters. The review staff—marketing, sales, customer representatives—can take all day and send feedback that arrives early the next morning (local time) at the supplier.

Retail is another arena looking for contactless transactions. Walking into an Amazon Go grocery store seems like stumbling upon a sedate and leisurely looting incident. People seem to be plucking items off the shelf, putting them in their bags, and then walking out without paying. But that's exactly what Amazon wants customers to do. The posted instructions say, "Use your app as you enter. Bag as you shop. JUST WALK OUT."

Scanning a customer's smartphone on entry identifies the customer for billing purposes. Cameras and sensors throughout the store record everything and use computer vision to know exactly who is taking what (or putting it back). The store needs no checkout counters, cashiers, or baggers.

REMOTE CONTROL

Two-way flows of data enable both remote visibility and remote control. For example, contract manufacturer Flex created Flex Pulse, which is both a software-based system and a network of physical "control tower" facilities for using supply chain visibility to manage and improve supply chain performance. The software enables real-time visibility and control for some 6,000 users on their desktops, laptops, and mobile devices.

Nine Flex Pulse centers around the world have walls of large interactive touchscreens that display a wide range of user-selectable information, such as real-time news of supply chain disruptions, social media streams, maps of global in-transit shipments, heat maps of

inventory levels, maps of exceptions, graphs of lead times, and other supply chain data. Each Flex Pulse center acts as a network operations center.

Operational information is also available on user desktops, which helped users navigate the situation during the pandemic. Flex's Torrel and her associates used Flex Pulse to manage the supply chain during the COVID-19 crisis:

"We created some specific dashboards to address COVID-19 so that we could understand at a customer level, at a site level, and at a part-number level where there potentially could be impacts," she said.

COVID-related physical distancing, limited travel, and restrictions on group gatherings all accelerated the trend toward using telepresence technologies for control and management. For example, even before the pandemic, Walgreens used in-store sensors to monitor its 9,500 U.S. locations—mostly for security. But it also uses the system for other critical situations.

For instance, electrical power sensors alert Walgreens to blackouts, which lets the company quickly contact the power company, supply backup generators, or send refrigerated trucks to recover perishable inventory. High-definition cameras allow managers to monitor inventory and manage personnel to serve customers faster. The video signals can feed into AI-based image recognition systems that either help measure the normal ebb and flow of activity or spot anomalies that need attention.

These exceptions could include a wet cleanup in Aisle 5, a forgotten pallet by a dock door, a blocked conveyor belt, or a surge in customer arrivals in the parking lot that portends the need for more checkout lines in the next 30 minutes.

Video cameras and sensors also allow a worker to be at home and in the factory, warehouse, or store at the same time. The next step is the remote control of simple facility functions, leading to remotely operated robots, and even the science fiction concept of a "dark facility," which is fully automated and operates on its own. ■

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WINTER READING GUIDE

Spending more time at home these days? Hunker down and delve into everything from the future of retail to global transportation. BY JACLYN IX



TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT AND LOGISTICS

Current Practice and Future Applications

BY ANTHONY M. PAGANO AND MATTHEW LIOTINE

Learn how businesses apply different technologies to improve product planning, materials management and inventory, distribution, the environment, and safety. Case studies illustrate the implications of these digital solutions as well as concrete examples of implementation, training standards, and integration with legacy systems.

THE SECRET LIFE OF GROCERIES

BY BENJAMIN LORR

Essential workers who stock shelves and operate warehouses provide services that many took for granted before the pandemic. This book investigates what it takes to run a supermarket, how food gets on shelves, and who is affected by the increased demand for efficiency. Learn Trader Joe's' success secrets, get the truckers' perspective, and see how products earn labels such as "fair trade." Follow entrepreneurs who fight for shelf space and learn essential tips for any new food business.



RESURRECTING RETAIL

The Future of Business in a Post-Pandemic World

BY DOUG STEPHENS

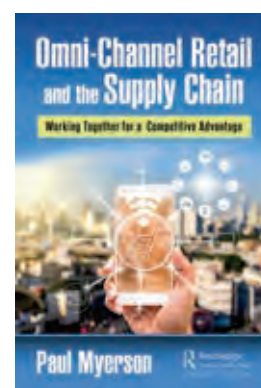
Few crises in modern history have disrupted the global retail industry—and daily life—as much as the pandemic. This book tells a compelling story of the unprecedented disruption and offers a roadmap for revitalizing retail. The author analyzes how the pandemic will reshape consumer life and provides an actionable vision for retail leaders working to succeed in a

OMNI-CHANNEL RETAIL AND THE SUPPLY CHAIN

Working Together for a Competitive Advantage

BY PAUL MYERSON

Omnichannel retail puts the supply chain front and center, as accomplishing high service levels requires real-time visibility of inventory as consumers move from one channel to another. Find out how to not only keep pace with the needs of today's ever-changing business landscape, but also to anticipate what may be required in the future to achieve superior customer service and profitability.





PRODUCTS THAT LAST

Product Design for Circular Business Models

BY CONNY BAKKER AND MARCEL DEN HOLLANDER

Governments and researchers recently shifted their focus to the short lifespan of consumer goods, prompted by wastefulness and climate change concerns. Some products have also declined in quality as companies cut costs to stay competitive and consumers prioritize style over quality. This book explains multiple points of view when it comes to product design and identifies the business opportunities ahead.



BINGE WORTHY BRANDING

BY STERLING MCKINLEY

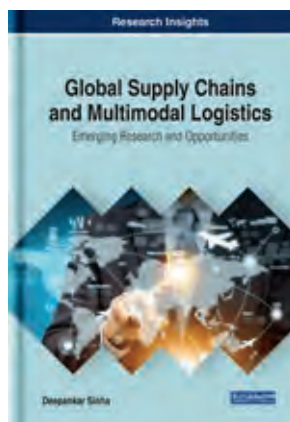
How can businesses build a brand strong enough to survive in today's noisy economy? This introduction to a new era of branding outlines practical ways retailers can use artificial intelligence and personalization to create a brand that attracts loyal customers, just like Netflix, Amazon, and Starbucks. Find out how consumers think, what they have come to expect, and how to keep them coming back.

GLOBAL SUPPLY CHAINS AND MULTIMODAL LOGISTICS

Emerging Research and Opportunities

BY DEEPANKAR SINHA

International logistics requires complex decision-making when it comes to multimodal transportation and moving goods across borders. How can businesses manage unique customer requirements while staying on top of varying regulations, costs, and risks? This book provides an integrated framework for effective decision-making, highlighting topics such as enterprise resource planning, forecasting models, and logistics systems.



TRANSPORTATION

A Global Supply Chain Perspective (Ninth Edition)

BY ROBERT NOVACK, BRIAN GIBSON, YOSHINORI SUZUKI, AND JOHN COYLE

Transportation is arguably the most critical component of global supply chains. The authors provide an overview of the unique operating and service characteristics, cost structure, and challenges transportation providers face. This new edition also highlights critical transportation management issues with insight into strategic activities and specific challenges, covering hard and soft technology as well as issues related to fuel, energy, management, the economy, and the environment.



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ADVANCED STRATEGIES IN SUPPLY CHAIN Competing in the New Normal

BY MURILLO XAVIER

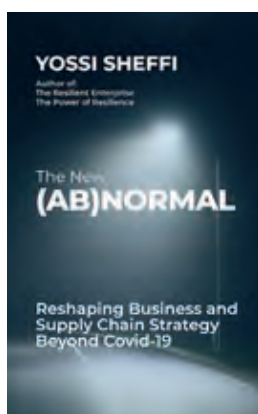
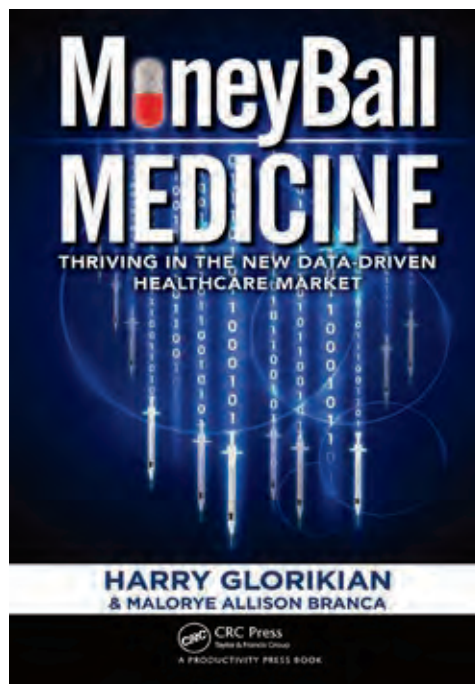
With more than 50% of consumers now shopping online for groceries, clothes, and other items, many won't go back to their old brick-and-mortar shopping habits when the pandemic is over. Catch up on the latest trends and best practices that can help executives stay ahead of the competition in the new normal, and discover new tools such as segmentation, process mining, factory 4.0, and drones.

MONEYBALL MEDICINE

Thriving in the New Data-Driven Healthcare Market

BY HARRY GLORIKIAN AND MALORYE ALLISON BRANCA

The healthcare industry is headed toward improved transparency and efficiency, presenting an opportunity to transition to a data-driven reality. Everyone from doctors to IT leaders will need to adapt to these changes to succeed. Learn about the unique intersection of entrepreneurial innovation and the evolving healthcare supply chain, as well as the parameters that predict who will win and who will lose.



THE NEW (AB)NORMAL

Reshaping Business and Supply Chain Strategy Beyond COVID-19

BY YOSSIE SHEFFI

Civilization depends on supply chains to produce and deliver products for 7.8 billion people. Much has been written about how scientists are racing to understand COVID-19 and how governments are responding, but less has been written about how businesses can cope. This book explains the critical role supply chains play in helping people, governments, and companies manage it all, drawing on interviews, media coverage, and historical analyses.

SUPPLY CHAIN 4.0

Improving Supply Chains with Analytics and Industry 4.0 Technologies

BY EMEL AKTAS, MICHAEL BOURLAKIS, IOANNIS MINIS, AND VASILEIOS ZEIMPEKIS

Automation has been woven into many supply chain processes. Predictive analytics better match supply with demand, and drones complete optimal last-mile delivery. This book presents new methods and technologies for optimizing processes and reducing operational costs. Explore emerging service models, market requirements, and case studies of new applications.



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LOGISTICS MANAGEMENT

An Analytics-Based Approach

BY TAN MILLER AND MATTHEW J. LIBERATORE

Using analytics effectively requires an understanding of basic and advanced logistics decision-making techniques. This book illustrates a wide range of practical strategies and techniques that facilitate decision-making across manufacturing, warehousing, transportation, and inventory management. Use it as a reference guide of frameworks to address specific logistics management decisions and challenges.



GREEN SUPPLY CHAIN MANAGEMENT

BY CHARISIOS ACHILLAS, DIMITRIOS AIDONIS, DIONYSIS BOCHTIS, AND DIMITRIS FOLINAS

Green supply chain management has emerged as a key strategy that can provide many competitive advantages. Sustainability reports from several companies reveal that green practices have helped reduce operating costs and boost efficiency while increasing businesses' sustainability. This guide outlines the challenges of implementing green supply chain management and offers guidance for decision-making in real-world situations.

RETHINKING COMPETITIVE ADVANTAGE

New Rules for the Digital Age

BY RAM CHARAN AND GERI WILLIGAN

Filled with behind-the-scenes stories about big digital winners as well as traditional companies that successfully transformed their organizations, this playbook provides methods that help businesses compete in today's digital-first environment. Competing against Amazon or Alibaba may seem daunting, but computing power is within reach for companies and startups of all sizes.



THE FORKLIFT TRUCKS AND THEIR SECRET SUPERPOWERS

BY EMER CONLON

This educational and entertaining children's book aims to communicate with customers of Combilift, an Ireland-based materials handling provider, while cultivating the next generation of engineers. The characters are Combilift forklifts who have unique superpowers, and a section at the back of the book contains interactive activities for readers of all ages. ■



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The background of the entire page is a blue-tinted photograph. At the top, there are heavy, dark blue curtains. Below them, a stage is visible with several people standing in a line, their forms rendered as light blue silhouettes against a brighter background. The overall composition suggests a theatrical or staged presentation.

INBOUND LOGISTICS PULLS BACK THE CURTAIN
ON SUPPLY CHAIN BEST PRACTICES.

BEHIND THE SCENES

OF TODAY'S LEADING
SUPPLY CHAINS

SOURCE: THOMAS INSIGHTS

IKEA

Founded in Sweden in 1943, the Ikea Group, the world's largest home furniture retailer, operates 313 stores in 38 territories and countries.

To ensure an efficient, effective supply chain, Ikea focuses on:

Sustainability. Ikea has been working toward a circular supply chain since 2018. It designs and manufacturers every item with next use in mind. Depending on the product, this could mean using only recycled materials in production or providing a spare parts warranty.

Inventory management. To avoid waste and inefficiencies caused by bulk ordering items that don't sell as expected, Ikea employs "minimum settings," the lowest number of products that have to be available before a new order can be placed, and "maximum settings," the highest number of products that can be ordered at once.

By packaging products compactly, customers can easily take their purchases directly from the warehouse to their homes to assemble themselves. This allows Ikea to maintain a larger inventory, in turn reducing the company's shipping costs.

Finally, by automating restocking processes for "high-flow" items—which make up 80% of a store's sales volume—the business is able to minimize the need for shipping and manual restocking.

In-store logistics. To streamline the flow of goods in and out of stores, Ikea operates with a unique and rare feature: in-store logistics personnel. These personnel monitor deliveries, record all inventory coming into stores, sort goods and ensure they're placed in the appropriate areas.

By handling logistics in-store, every Ikea location can closely monitor and control all processes, helping to ensure high store-level inventory accuracy—a rarity for many retailers

that rely on forecasting and inventory replenishment logic handled at distribution centers.

Not only does this help Ikea reduce costs, it also helps improve customer loyalty, creating an easy-to-navigate shopping experience that allows consumers to buy the furniture they need, where and when they need it.

LOOKING AHEAD

In light of the COVID-19 crisis, the retailer was forced to temporarily close some stores, but demand for office furniture remained steady as people working remotely seek to create comfortable, practical setups.



TARGET

The superstore has been quick to adapt to the changing retail environment, adopting new practices in everything from how it stocks warehouse shelves to boosting supply chain transparency.

Target's supply chain has undergone a significant modernization effort to drive efficiency, improve visibility, make better use of store space, and reduce operating costs.

• Pick-and-pack strategy. Rather than shipping full cases of a product—such as a case containing two dozen jars of pasta sauce—each store receives a tote from the distribution center containing a "mixed bag" of different items they've ordered. This move has enabled the company to reduce inventory management and labor costs, and better utilize space in stores.

• Store fulfillment. To cut down on shipping costs, Target shifted digital fulfillment from distribution centers to stores. Customers can either pick up their order in-store or have an employee bring it to their vehicle. Target now fulfills 80% of online orders from brick-and-mortar stores and has seen a 40% reduction in fulfillment costs as a result. This represents a major change from the typical warehouse-based fulfillment model.

• Supply chain visibility. Target has invested in new technology and processes to

create better supply chain visibility through real-time tracking efforts for whole shipments and individual cases while automating shipment processes to reduce human error.

• Smaller backrooms. Adopting pick and pack means that stores no longer require as much backroom square footage. Target has put that space to good use, turning backroom square footage into storage space to upgrade the customer "experience factor." The new backroom model has also allowed the company to open smaller format stores.



Shop-in-shop spaces. The recent modernization has made a trip to Target an experience for customers, with "shop-in-shop" spaces such as Starbucks or mini Disney stores located in 25 stores. These mini-stores feature music, interactive displays, and comfortable seating. Ultimately, the shop-in-shop concept could turn Target into a destination like a shopping mall.

• Improved sustainability. In 2019, Target set sustainability goals that aimed to reduce greenhouse gas emissions 30% by 2030, focusing initially on vehicles, facilities, and purchased power such as gas and electricity. The company intends to reduce emissions in-house while working with at least 80% of suppliers to lower emissions throughout the entire supply chain.

BOEING

As one of the world's largest aircraft manufacturers, the world's second-biggest defense contractor, and the leading U.S. exporter, Boeing operates a vast, complex supply chain.

Managing an aerospace supply chain requires extremely comprehensive planning—often years in advance to accurately project market demand changes—as well as a willingness to evolve and adapt. Everything from design tweaks to geopolitical issues can disrupt one

or more elements in the lengthy chain.

A single Boeing airplane is made of more than three million parts, which makes the company's supply chain a massive, global operation.

CONNECTING PARTNERS

The 787 Dreamliner, which first took commercial flight in 2009, marked the beginning of a new structure for Boeing's production operations. This structural shift may serve as a useful example of operational shifts on which other companies can model



their operations.

Before 2007, Boeing would send fully detailed designs to each of its partners producing different aircraft components. These partners would then send individual parts to Boeing for testing, validation, and final assembly.

With the 787, however, Boeing worked with

individual suppliers that helped design, test, and validate the pieces they manufactured themselves. This meant that Boeing partners at every point in the supply chain needed to communicate with each other and with Boeing, to coordinate the timing of purchase orders, component

COSTCO

Costco's warehouse-style stores and bulk products mean that its supply chain operates differently than the average big-box retailer.

Here's how Costco manages to think outside of the typical big-box supply chain model.

Simplicity. The company uses a "No Touch" policy. This means that most products stay on pallets from the supplier for their entire trip through Costco's supply chain, even being presented to customers on those very same pallets.

The company works with suppliers to make sure pallets are stacked and wrapped to accommodate this efficiency. This strategy creates savings across the company, reducing labor in logistics and in stores.



Costco's approach to warehousing and logistics is to use a simple cross-docking system to move freight directly from one of their depots to a truck headed to the warehouse that ordered it.

The warehouses act as both retail point of sale and, well, warehouse. They essentially combine retail sales floors with warehouses to minimize square footage occupied and simplify the supply chain so that distribution centers are unnecessary.

Limited SKUs. One hallmark of Costco's lean approach is carrying limited SKUs. Where you could expect to find more than 10,000 unique products at your average big-time retailer, Costco only averages about 3,700 SKUs.

Fewer SKUs are easier and cheaper to manage. They require less time, effort, and money to manage stock, and fewer people can handle stock to a more effective degree.

Costco doesn't have as many suppliers to deal with, which means simpler, leaner procurement operations that shoulder a smaller burden than most multi-national companies.

International expansion. Though Costco moved slowly into international

markets, international revenue accounts for about 28% of the company's total revenue.

Currently, the company has a physical presence in 11 countries outside the United States. Costco recently opened its first warehouse in Shanghai and was forced to close its doors on the first day of operation due to an overwhelming response from customers.

Vertical integration. Costco's plans for the future include bringing segments of the supply chain in-house to better control costs. For instance, Costco acquired Innovent Solutions to handle big and bulky order deliveries, most of which take place online for the warehouse retailer. Innovent Solutions is a middle and last-mile delivery and installation carrier.

The company plans to add warehouses and logistics centers both here and abroad in the coming years.

E-commerce. While the company was a little late to the e-commerce party, it has been stepping up its game over the past two years and continues to do so today.

The pandemic has led to an online grocery sales spike for Costco, with a 65.3% growth in Q3 2020 earnings.

DELL

Dell's supply chain has transformed significantly since the company pioneered its direct-to-customer model for PCs in the 1990s. Dell's customer-centric and lean supply chain have enabled the company to remain competitive despite the rise of tech giants such as Apple.

Direct (B2C) sales. Dell's direct sales strategy has not only helped the tech company bypass retailers and increase profits on units sold, it has also helped Dell gain excellent visibility into what its customers want. This model has led to the compilation of mountains of valuable data on consumer behavior and preferences, allowing Dell to continuously improve product and delivery options to keep up with ever-changing trends.

Leveraging this data gives Dell an advantage when it comes to demand forecasting and planning. This data is passed on to suppliers to ensure demand is met.

Customization to segmented strategy. If you ordered a Dell PC 15 to 20 years ago, you may remember going through a customization process when placing your order, essentially designing a machine and choosing

features such as ports, a CD-ROM drive, and so on. Customers would receive a computer that met their specifications and get exactly what they needed without paying for features they had no use for.

For Dell, customization enabled better monitoring of the quality of components and kept on-hand inventory low, reducing potential waste and overflow.

However, in 2010, changes in the market meant customization was no longer the most advantageous strategy. The company switched to a segmented approach where it offered customers three choices when purchasing a PC: configurable, preconfigured, or ready-to-ship.

This approach enabled Dell to continue providing customers with a choice of options while simplifying



its processes to drive efficiency. The company's supply chain has been re-modeled to enable delivery of these three options.

Inventory management goals. Dell relies on a speedy manufacturing process to keep up with orders, enabling it to hold inventory for no longer than six days and cut warehousing costs.

Strong supplier relationships. Dell has prioritized the building of strong supplier relationships to carry out its low inventory strategy and continue to meet consumer demand. Suppliers including Samsung, Motorola, and Sony typically maintain manufacturing facilities near Dell facilities to cut down on transport time and costs.

Communication. Dell uses a platform known as Value Chain to share inventory data with suppliers to help them plan accordingly.

Transparency goals. Dell nominated 2020 as the year it would achieve 100% transparency in key areas regarding environmental and social impact. The company measures its progress in achieving transparency through standardized global reporting practices and requires its suppliers to undertake similar reporting.

schedules, and final delivery.

This new supply chain structure helped reduce costs and increase productivity—allowing the new aircraft to be delivered quicker than ever before.

SHIFTING DEMAND

Boeing's wide-reaching supply chain enables the company to adapt to changing market demands in different ways in different parts of the world.

As of 2017, Boeing derived about 70% of aircraft revenue from international customers in more than 150 countries. But countries where Boeing has its biggest operations, such as Japan

and China, started to build their own domestic products to compete.

In response, Boeing began selling more of its products in these countries, which made working with the company a more attractive economic option for airlines there.

The company also initiated onshoring, bringing more of its supply chain operations back to American soil. For example, the wings of the Boeing 777, previously produced in Japan, were built entirely in the United States.

To save on costs and keep up with demand for parts, Boeing fully manages teardowns—the process of harvesting retired planes for

Used Serviceable Materials.

A typical teardown reaps about 2,500 parts, but in some cases up to 6,000 parts from a single airplane can be salvaged for reuse. Boeing previously outsourced this process to third parties, but now handles it from start to finish.

UNDER ONE UMBRELLA

Similarly, before 2020, Boeing's acquired brand Aviall marketed and distributed about two million different products from the Boeing catalog. In January 2020, Boeing retired the Aviall brand name to sell these products under its umbrella.

STEPPING UP

In response to the coronavirus pandemic, Boeing leveraged its supply chain to spring into a different kind of action.

In April 2020, Boeing shipped more than 2,300 3D-printed face shields to the Department of Health and Human Services.

In May, the company airlifted more than 150,000 units of personal protective equipment from China to the United States.

As countries continue to reopen their economies and U.S. suppliers begin to return to work, Boeing has begun to resume aircraft operations. ■



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DCSOLUTIONS

Legend Valve Opens Fulfillment Spigot

THE CUSTOMER

Legend Valve, based in Auburn Hills, Michigan, provides high-quality valves and fittings for the plumbing, industrial, commercial, and residential markets.

THE PROVIDER

Waltham, Massachusetts-based 6 River Systems offers flexible, human-first, and innovative products that make warehouses faster and deliver immediate value. As part of global commerce company Shopify, 6 River Systems empowers operators and entrepreneurs to compete in multichannel commerce.

by Jennifer Baljko

When you promise 100% order fulfillment accuracy and best-in-class customer service, your company's integrity depends on how well you meet those expectations.

Legend Valve knows full well what this means. These core values are center stage for the plumbing wholesaler, and they served as foundational principles in a recently rolled out warehouse automation initiative.

"We differentiate ourselves by the way we serve our customers, all the way from how we process orders in the front office to the speed of fulfillment in the back office," says Larry Emmert, vice president of operations at Legend Valve, based in Auburn Hills, Michigan.

To keep this high bar of trust, Legend Valve turned to 6 River Systems (6RS), in Waltham, Massachusetts, to create a custom solution based on automating repetitive order management and fulfillment tasks. Collaborative mobile robots called Chucks helped Legend Valve increase pick rates with optimized pick paths and directed workflows. The results: significantly improved same-day shipping, reduced warehouse employee fatigue, and lower transportation costs.

Legend Valve, founded in 1988, maintains two fulfillment centers, one in Auburn Hills and another in Reno, Nevada.

The majority of the company's customers are in the plumbing wholesale

market, primarily in the United States with some reach into Canada; a small part of its retail business comes from big-box stores. The company carries more than 10,000 SKUs of plumbing products, and prides itself on the way it serves customers end to end.

Legend Valve's service level is its differentiating competitive characteristic, according to Emmert. "Order fulfillment is Legend Valve's go-to strategy for how we service customers and how we reach the market," he says, adding that most products are shipped via ground transportation.

CASH-BACK GUARANTEE

Fulfillment is such a vital piece of the company's business that it provides a cash-back guarantee to customers if it doesn't accurately meet its promised 100% fill rate. Legend Valve also guarantees that it will have products on its shelves and a 24-hour order-to-shipment turnaround time.

Even before the recent solution upgrades, the company's fill rate and 24-hour shipment targets consistently ran at 100%, and order accuracy was above 99%, Emmert says.

Still, some gaps needed attention.

For instance, Emmert says the company

wanted to improve its shipping goal from 24 hours to same day for orders received before 5 p.m. It also wanted to increase volume as it grew, as well as its ability to handle more volume without adding resources. This intention was also coupled with an eye on neither adding nor reducing headcount while adding volume.

CASEBOOK STUDY

Aw, Chucks

THE CHALLENGE

National plumbing wholesaler Legend Valve wanted to shift from manual visibility tracking across its warehouse and distribution centers and make it easier for customers to manage their end-to-end orders, shipments, and service requests.

THE SOLUTION

Collaborative mobile robots, called Chucks, from 6 River Systems based in Waltham, Massachusetts, were a core piece of the custom solution Legend Valve implemented to automate repetitive order management and fulfillment tasks. More broadly, the solution involved the integration of Packsize, 6 River Systems, and the company's ERP system.

THE RESULTS

- Pick rates doubled.
- Same-day shipping improved from 80% to 95%.
- Significantly reduced various metrics such as transportation costs, dunnage requirements, products damaged in transit, employee fatigue, and employee training time.
- Optimized pick paths, directed workflows, and streamlined pick-and-pack processes.

NEXT STEPS

Continue to make the overall fulfillment process more efficient and evaluate ways to improve and delineate warehouse zones and workflow within these zones.

As these issues came more to the forefront, so did the issue of automation.

Although inbound order processing through the company's customer service group has been highly automated for about a decade, the fulfillment and warehouse management side, while efficient, was largely a manual process until 2020.

At the Michigan facility, "employees pushed heavy carts with heavy products across a 50,000-square-foot warehouse," recalls Emmert. "Despite the automation we did, we still had many manual parts in the middle of the order management process. We knew we had to improve those steps."

Building off the fundamental questions of how Legend Valve could improve service levels to customers and increase throughput with existing resources, the company began evaluating its warehouse automation in earnest in 2019.

Emmert and his team began reviewing complex picking and conveyor automation services, pick-to-light and goods-to-persons technology, and collaborative robot systems (cobots). Two things Emmert knew he wanted from any solution were a "reasonable time frame" for implementation and "to get the biggest bang for the buck."

While researching options, Emmert read an article mentioning 6RS, and that moved the entire conversation forward.

By January 2020, Legend Valve, 6RS, and another partner, Salt Lake City-based Packsize International, launched a custom-designed fulfillment process to enable Legend Valve to pick, pack, and ship orders more quickly and efficiently through the Michigan warehouse. Legend Valve also integrated this new order fulfillment process with its JD Edwards enterprise resource planning (ERP) system.

"This project took a very collaborative approach," says Fergal Glynn, vice president of marketing at 6RS.

DRILLING DOWN

From a 30,000-foot perspective, two important aspects of the solution look like this:

Packsize analyzes and efficiently cubes orders as they come in, with the goal of optimizing packaging. 6RS intelligently allocates orders to optimize workflows and pick paths with its collaborative Chucks robots. Legend Valve was operating 10 Chucks as of summer 2020.

"Packsize handles the right-size packaging," Glynn says. "6RS looks at



6 River Systems' collaborative Chuck robots display product photos on a monitor to make it easier for Legend Valve's warehouse associates to identify the products they pick. As a result, the plumbing wholesaler has increased order fulfillment accuracy.



National plumbing wholesaler Legend Valve turned to automation providers 6 River Systems and Packsize to design a custom fulfillment process aimed at improving pick, pack, and ship activity.

it from the angle of what needs to be done in the building to fulfill the order before 5 p.m., and how the workers and the Chucks can navigate to particular locations. And, all of this is integrated with the ERP system.”

On a drilled-down level, 6RS, which allowed for fast implementation with minimal physical changes to the warehouse, calculates and prioritizes picking routes, employee walking time, cobot/Chuck travel time across the warehouse and coordinates multi-location order picking in the warehouse between different pickers. The Chucks also carry all the picked products, eliminating the need for associates to push heavy carts around the warehouse.

Additionally, each Chuck has a monitor that displays product photos making it easier for warehouse associates to identify the products they pick, which, in turn, improves order fulfillment accuracy.

Chucks bring the warehouse associate down the correct aisle, stop in front of the right section, show a picture of the product, and identify the exact box or color-coded location. Associates, who have a Smart Gladiator scanner on their finger, scan the picked product, and the cobot verifies that the correct product was selected.

“With 10,000 products on Legend Valve’s shelves, picking the right product is critical to supporting the strategy of 100% order accuracy,” says Glynn.

The unit’s onboard mobile printer and packaging materials also allow the warehouse associate to bag and label individual pieces as soon as they’re picked, which reduces the number of touchpoints in getting the order out. Since customers are not required to order case-size quantities and can buy however many parts they need, this aspect of the solution is a valuable time-saver and improves overall packing efficiency, Emmert notes.

REAPING THE BENEFITS

Legend Valve has already reported significant improvements since the January 2020 go-live date: Pick rates doubled after the automation was implemented, same-day shipping improved from 80% to 95%, and transportation costs, dunnage requirements, products damaged in transit, employee fatigue, and employee training time were reduced.

Also, in a year when the coronavirus pandemic and related lockdown forced companies to adjust their manufacturing, distribution, and logistics strategies, the new order fulfillment process allowed

Legend Valve to more efficiently ride the wave as demand and order volume changed, Emmert says.

In the early phases of the lockdown, Legend Valve saw smaller orders that needed curbside delivery to specific individual plumbers or work sites. Customer business sites were closed, and packages were rerouted.

“The pandemic affected every state and every customer differently, but the majority of our customers stayed open because they were considered essential suppliers within the water infrastructure segment,” Emmert says. “Initially, there was a deep decline in orders, but then it picked up as states reopened.

“As things reopened, we saw a lot of pent-up demand,” he adds. “We were able to manage those swings in volume, both from an order processing perspective and on the floor in the warehouse, because of this implementation. The Chucks don’t care if you have 10 small orders or one big order. It’s the picking efficiency that matters most.”

Going forward, Emmert says Legend Valve is evaluating other ways to improve order fulfillment process efficiency with 6RS and Packsize. It is also analyzing ways to improve and delineate warehouse zones and workflow within those zones. ■



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There is a common misconception about warehousing that assumes there's little more to it than keeping a roof standing over some goods for a period of time. Really, how hard can that be?

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IT TOOLKIT

SerVaas Laboratories Cleans Up with Business Intelligence

THE CUSTOMER

SerVaas Laboratories, based in Indianapolis, Indiana, is a consumer goods company that produces and carries products under the Bar Keepers Friend brand name.

THE PROVIDER

PowerPivotPro (P3) is a Microsoft data platform consultancy that channels business-critical data to drive outcomes.

by Karen Kroll

When a company's employee roster lists just about 100 workers, yet its products are sold in about one dozen countries, timely, accurate sales and inventory data is critical. Business intelligence (BI) solutions, however, have traditionally exceeded the budgets of small and mid-sized companies.

That was the challenge facing SerVaas Laboratories. "We're international, but we're also relatively small," says Matt Selig, executive vice president with the Indianapolis-based firm. To gain timely insight into sales and inventory, Selig and his team turned to PowerPivotPro (P3), a provider of BI tools geared to mid-sized companies.

SerVaas Laboratories is the company behind Bar Keepers Friend, a cleaner that uses the oxalic acid found in rhubarb, spinach, and other vegetables, to break down rust, tarnish, and stains. While barkeepers originally used it to polish brass rails—hence, its name—millions of homeowners and other businesses now rely on Bar Keepers Friend.

Not only is the cleaner distributed globally, but it's also sold across a range of outlets, including online and in grocery stores, big-box retailers, and home improvement centers, among others. In England, Bar Keepers Friend is made under license with different labeling. To add more complexity, the company sources material from around the world.

To pay bills, receive orders, and purchase materials, SerVaas Laboratories used a traditional general ledger accounting solution. Although it handled these tasks capably, tracking production, inventory, and sales information was cumbersome.

NOTHING GOOD TO REPORT

Running a simple sales report could take 10 minutes and produce a report that extended to 40 pages. "The report consisted of hundreds and hundreds of lines of tiny numbers," Selig says.

It wasn't uncommon for Selig to spend 20% of his time extracting sales data from the accounting system, manipulating it, and creating reports for executives and others. The company's controller dedicated even more time to these tasks.

"We had a lot of information and no practical way to use it," Selig says. "Instead, it was isolated in that accounting system."

Gaining access to information on the production and operations side wasn't any easier. "The only practical way to find out how many widgets we had was to go out in the warehouse and count

CASEBOOK STUDY

Ready to BI

THE CHALLENGE

SerVaas Laboratories needed to gain timely, accurate visibility into sales, inventory, finished goods, and other performance and operational metrics.

THE SOLUTION

- Partner with PowerPivotPro (P3), a consulting firm that provides business intelligence solutions for small and mid-size companies.
- Create a sales dashboard that quickly shows sales by region and channel, among other factors, enabling the company to more nimbly respond to shifts in demand.
- Create a dashboard showing inventory levels in near-real time, reducing the need for higher levels of safety stocks.

THE RESULTS

- SerVaas Laboratories was able to confidently triple the size of its second production shift to fill spikes in orders during the pandemic.
- The company reduced the time required to compile sales reports for customers.
- The company reduced safety stock levels, which will eventually free up about \$1 million in working capital.

NEXT STEPS

SerVaas Laboratories plans to create dashboards for digital marketing and machine operations.



them,” Selig says. Because it was hard to estimate inventory levels, safety stock levels tended to run high.

The system was like driving a car after a snowstorm with only a fraction of the window cleared off, says Rob Collie, founder and chief executive officer with P3. “SerVaas needed more accurate and timely data,” he says. At the same time, it needed to work within its budget.

Selig had been reading about Power BI and came across a book Collie co-authored, titled *Power Pivot and Power BI*. Eventually, he contacted P3.

TURNING DATA INTO BI

P3 is a Microsoft partner focused on helping businesses leverage their data to generate insight and drive performance—in other words, turning data into BI. While BI has been around since about the late 1990s, it’s generally been characterized by long, expensive projects that were available mostly to enterprise companies, Collie says.

The Power BI solutions P3 offers dramatically cut the time and cost typically required to execute these solutions. In part, that’s because it sits on top of a company’s other financial systems and pulls data from them, in its current form and regularly, Collie says. In addition, P3’s consultants

are skilled in communication and the nuances of business, as well as technology. Instead of weeks or months gathering project requirements, the process “gets compressed into fast-paced conversations,” Collie adds.

When P3 hosted a class on Power BI, Selig attended, along with SerVaas’ controller. Selig showed Collie several sketches of the dashboards he’d made and asked if Collie could replicate them. Three days later, P3 handed SerVaas “a pretty good functioning dashboard report” for its sales team, Selig says.

As important as the speed with which the solution was generated was the access to information it provided. “We were finding answers to questions we didn’t even know we had,” Selig says. And through his work with P3, Selig had learned enough about Power BI that he could, on his own, continue to refine the sales dashboards and create new ones.

The launch of the sales dashboards in early 2020 proved auspicious, as the pandemic took hold shortly after. In mid-March, the dashboard let Selig and his team know that several of the company’s largest customers had placed orders for more than double their usual levels, while another had boosted its order by 40%.



When the pandemic hit, SerVaas Laboratories saw some customer orders fall to zero while others increased 120%. The P3 solution gave the company the data it needed to redirect output and ramp up production.

Had SerVaas not seen the dashboards, management would have had to wait several more weeks for this information.

Just as important, SerVaas was able to segment customers by channel. The dashboards showed orders at mass merchandisers, grocers, and home improvement centers were increasing by up to 60% while some other retailers had pretty much shut down, and SerVaas could reallocate products that otherwise would have gone to them.

Based on this insight, SerVaas decided to triple the size of its second production shift, confident that the spike in demand was real. “With the sales dashboard, we can monitor what’s happening in real time,” Selig says.

The dashboards also eliminate a great deal of manual work. Previously, one salesperson spent close to one day each quarter creating a report for one customer—and that was with the help of the accounting staff. “With the sales dashboard, we reduced that report to about 30 seconds,” Selig says. And the salesperson can now create the report on their own.

TAKING STOCK OF INVENTORY

With the clear success of the sales dashboards, Selig and his team set about developing inventory dashboards. “We knew we had too much inventory, but we didn’t know of what,” Selig says.

He provides an example of how record-keeping could go astray: Say the purchasing manager orders 1,000 widgets at \$1 per widget, but only 950 widgets show up. The shipping employees count and sign for the widgets, put them in the warehouse, and complete the receiving report, which goes to accounting.

Eventually, accounting realizes the discrepancy between the purchase order and the delivery. However, it could be one month later, and the system grinds to a halt as employees research and correct the discrepancy. The system was both time-consuming and less than accurate, leading to higher levels of safety stock, Selig says.

Creating the inventory dashboards took longer, but only because the pandemic meant SerVaas and P3 were



P3 dashboards help track finished goods in SerVaas Laboratories’ external warehouses. The dashboard allows users to quickly access warehouse levels, the number of open purchase orders, and other data.

limited to virtual connections for an hour or two each week. As of late July 2020, they were up and running. Like the sales dashboards, these pull critical information from the accounting system and put it in an easy-to-use format.

When placing inventory orders, employees can easily find out, for instance, how many of every kind of widget the company has used for each of the past six months, the level of inventory on hand, and lead times for reorders. Using this information, employees gain a better idea of when to place orders to ensure they don’t run out, but without having to amass large safety stocks.

The same dashboards also help track finished goods in SerVaas’ external warehouses. Users of the dashboards can quickly see warehouse levels, as well as the number of open purchase orders, among other information.

“Those are questions that our materials people ask all the time,” Selig says. “Now, you just click several times for the answer.”

SerVaas and P3 are currently working together to build product and customer profitability reports. These will allow Selig and other executives to see the company’s financial reports in a

dashboard format. The goal is to build reports that allow company executives to analyze sales at the store level for some of its biggest customers, as well as by region and product.

Selig isn’t stopping just yet. He’s planning to develop dashboards that would provide insight on the company’s digital marketing data. These might show, among other information, how different marketing campaigns perform and how digital marketing efforts complement nondigital marketing initiatives.

Also on the to-do list are dashboards for the company’s production equipment. These would leverage the operational information the machines generate to show their maintenance requirements and performance.

The results to date have been promising. As of early September, SerVaas Laboratories had achieved about 15% of the \$1 million inventory reduction that management is looking for, simply by using dashboards to guide inventory decisions.

Referring to the P3 solution, Selig says, “It’s a work in progress but even if we stop at this point, it has more than paid for itself.” ■



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ETALES

Working Like a Dog to Fill Pet Food Surge Orders

THE CUSTOMER

The Honest Kitchen, a manufacturer of minimally processed, human-grade, all-natural pet food, offers nearly 80 product options for dogs and cats. The company sources ingredients for its pet foods, toppers, treats, and supplements from the human food supply chain and manufactures in human grade-approved facilities.

THE PROVIDER

Saddle Creek Logistics Services is an asset-based, third-party logistics provider headquartered in Lakeland, Florida. It specializes in designing and delivering omnichannel logistics solutions for manufacturers, retailers, and e-commerce companies.

by Sandra Beckwith

When significant growth at all-natural pet food company The Honest Kitchen compelled leadership to rethink its omnichannel logistics strategy three years ago, the company turned to long-time partner Saddle Creek Logistics Services for solutions.

That was a fortuitous decision considering how COVID-19 upended the company's business in the second and third quarters of 2020. Working side by side to make daily decisions in a dynamic environment, the pet food company and its third-party logistics (3PL) provider filled a record number of orders safely by leveraging the flexibility of the system they had implemented earlier.

The Honest Kitchen has been nimble from its start in 2002, when founder and chief integrity officer Lucy Postins followed a hunch that nutrition could help her dog's health problems. Turns out she was right, so she began selling healthful, homemade people food for dogs from her San Diego, California, home under The Honest Kitchen brand.

During the next three years, staff doubled—to two—as the company added grain-free meals and treats, and received approval to use the term “human grade” on its products.

Today, with more than 50 employees, The Honest Kitchen offers nearly 80 options from five product lines for dogs and three product lines for cats. The company sources its ingredients for pet

foods, toppers, treats, and supplements from the human food supply chain and manufactures in human grade-approved facilities. While it co-manufactures most of the products in the Midwest, the company recently opened a West Coast manufacturing operation to produce its Whole Food Clusters, a dry dog food line.

The company partnered with Saddle Creek back in 2006 when order volume grew to the point where Postins knew she couldn't keep filling orders from her kitchen. The logistics company assumed fulfillment in its San Diego facility.

The two nimble and entrepreneurial companies grew together. Today, Saddle Creek fills The Honest Kitchen's food orders from its larger Buena Park, California, and Joliet, Illinois, distribution centers.

SMALL BUT MIGHTY

As e-commerce has grown in recent years, so has The Honest Kitchen's business. While maintaining its commitment to small, independent pet stores, the company has grown through sales on Amazon and Chewy.com. It also offers direct-to-consumer sales on its branded website.

CASEBOOK STUDY

It's In The Doggy Bag

CHALLENGE

Orders for pet food company The Honest Kitchen exploded when COVID-19 caused brick-and-mortar retailers to order significantly more inventory than usual for consumers stocking up at home. At the same time, e-commerce retail volume also increased dramatically.

SOLUTION

- Strategize with 3PL partner Saddle Creek Logistics Services to optimize inventory levels and prioritize orders.
- Fill orders based not just on geography, but also on distribution center inventory levels.
- Stagger shifts and use cross-trained employees to help fill orders safely.

RESULTS

- Even though order volume hit record levels, the pet food company met demand.
- The company acquired new customers from brands that faltered during the pandemic.

NEXT STEPS

Continue the partnership as The Honest Kitchen grows with increased volume and new products.



Jeff Jones, Saddle Creek's vice president of business development, wasn't surprised to see the pet food brand's sales take off online. "Consumers are passionate about their pets. They'll feed their dogs before they feed their kids," he jokes.

In 2017, with double-digit year-over-year growth, The Honest Kitchen worked with the 3PL to devise a strategy that would allow Saddle Creek to optimize warehousing and fulfillment for omnichannel distribution. Jones' team managed the growth strategically, with an emphasis on pairing the brand's expanding profile with the most appropriate options among Saddle Creek's now 49 locations.

"Each facility has its own capabilities and personality, so we look to ensure a good mutual fit," Jones says.

AND THEN CAME COVID

That strategy has worked. "Through our partnership with Saddle Creek, we're able to facilitate best-in-class fulfillment that supports our growth," says Jake Fuller, chief financial officer at The Honest Kitchen.

The omnichannel expansion support was in place and on autopilot when COVID-19 hit in early March 2020. That's when all projections, business rules, and expectations went out the doggy door.

"In March, we saw a dramatic increase in order activity across all channels—from our online partners, but also from independent pet stores," says Fuller. "We faced an unprecedented challenge: How do we fulfill and ship a great number of orders in the expected time frame to support our customers' needs and demands during a difficult period?"

"We saw record online orders as people stocked up during the early days of the pandemic," says Jones. "There was also a lot of disruption with retail customers as volume migrated away from stores to e-commerce."

The partners strategized frequently, making decisions in a constantly changing environment. For instance, the team continuously reprioritized orders to best meet customer needs across all channels.

Other changes included constantly shifting inventory levels across the 3PL's



Thanks in large part to the omnichannel logistics strategy that The Honest Kitchen and its long-time 3PL provider Saddle Creek Logistics Services implemented three years ago, the pet food company filled a record number of orders in the midst of a pandemic.

distribution centers and filling orders based on product availability and which facility had enough in stock to ship complete. The strategy wasn't optimal, but it worked.

Business decisions weren't limited to inventory levels and locations or how to prioritize orders, though. Saddle Creek had to keep staff safe, too.

"Many early conversations were about our facilities," Jones says. "The safety of associates was our first priority."

Concerned initially about staff level, the 3PL was able to maintain 95% associate attendance throughout the crisis. Without knowing what was to come initially, however, the company needed contingency plans in case there was an outbreak in any of its facilities, including the two serving The Honest Kitchen.

"We had to plan for events like trucks not being able to pick up orders," Jones says.

ADJUSTING TO DISRUPTION

COVID-19-related changes at Saddle Creek facilities included reorganizing on the floor to increase distance between employees, staggering shifts and breaks, and providing staff with personal protection equipment. While there was always pressure to keep filling orders, facilities had to plan for regular deep-cleaning, too.

"We took a slight productivity hit early on, but we adjusted accordingly and quickly got back to our normal high degree of service," says Jones.

Joey Smits, director of inventory management and logistics at The Honest Kitchen, appreciates how Saddle Creek could bring in staff usually assigned to other clients as needed.

"Saddle Creek could be flexible and nimble because their staff is cross-trained across various clients that use systems that are similar to ours," Smits says. "During unprecedented times, it was good to know that they had the option to go with the flow and support us."

The partners acknowledged early on that the 3PL wouldn't always be able to meet service level agreements



Saddle Creek Logistics Services fills The Honest Kitchen's orders from its Buena Park, California, and Joliet, Illinois, distribution centers.

during the pandemic. When the original assumption is 1,000 orders per day and volume jumps to 5,000, something has to give. So, they put the focus on understanding the situation and discussing how to prioritize the workload when making decisions about specifics, such as whether to emphasize receiving inventory or processing outbound orders.

Because the pandemic didn't significantly disrupt the raw material supply chain or the co-manufacturing operation, the pet food company could replenish inventory and even introduce new products. What's more, in addition to meeting existing customer demand, the brand also acquired new customers from companies that struggled to fill orders.

Today, both companies are well positioned to weather any future pandemic-related shutdowns. With a stable situation now, they're returning to collaborating on various projects, including building variety packs for the pet food brand's new Pour Overs, Butcher Block Pates, and One Pot Stews.

For instance, the 5.5-ounce Pour Overs, known as "toppers," are sold in cases of 12. When The Honest Kitchen began thinking about how to let customers sample the three different protein flavors before committing to a case, it discussed options with the 3PL. Saddle Creek now bundles the product into three-flavor variety packs for e-commerce.

"We started by telling Saddle Creek that we don't know how much product we need, and we don't know how well it will be received, but we need your help," says Fuller.

Saddle Creek assembled a small number of variety packs to start as the brand tested the idea. "Now we kit thousands monthly," he adds.

The long-standing relationship and shared entrepreneurial spirit make these successes possible. While Jones notes that his company continues to look for ways to help The Honest Kitchen provide value to customers, Smits sees the 3PL as an important part of the pet food company's team.

"The Saddle Creek team is a natural extension of our business," says Smits. ■

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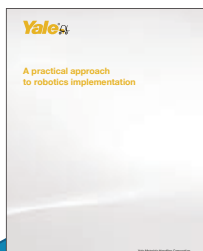
Offered by IBM

bit.ly/WeatherAndRetail

Unpredictable weather can have a substantial impact on retailers and their supply chains. Even the smallest changes can affect store footfall, operations, product availability, and sales. With a greater understanding of weather's impact on their business—good or bad—retailers can anticipate behavior and business challenges in the future. Access this free webinar to learn how to turn weather insights into decision-making information.



whitepapers



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A Practical Approach to Robotics Implementation

Offered by Yale

Supply chains have warmed up to the idea that robotic solutions make real business sense for warehouse and manufacturing operations—especially in response to the COVID-19 outbreak and growing labor challenges. But implementation still comes with numerous questions, from ROI and safety to IT, integration, and planning. This free whitepaper provides answers to put you on a practical path to robotics implementation.



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How to Reduce Supply Chain Complexity Even as the Industry Becomes More Complicated

Offered by Hub Group

As everything in the retail climate continues to evolve, one thing stays the same, and that is change. Read this free whitepaper to discover the latest industry data and find out a few practical steps you can start implementing today to better position your retail supply chain to withstand future challenges.



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Four Ways Digital Freight Networks Improve Shipping for Small and Mid-Size Businesses

Offered by Convoy

From fluctuating demand to uncertain capacity, 2020 has been a challenging year for shippers. Small and mid-size businesses have been hit especially hard, with transportation teams finding new ways to streamline operations, reduce costs, and improve customer experience. Learn the four ways that digital freight networks can help businesses weather market volatility and improve freight logistics.

Supply Chain Insights

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Fighting Time and Temperature: How Technology, Data, and Technical Expertise Redefine Cold Chain Logistics

Offered by Softbox Systems

Global demand for temperature-sensitive pharma products is increasing. In the wake of COVID-19, keeping products safe and regulated during cold chain distribution is especially vital. Read this free whitepaper to learn how innovative technology, data, and technical expertise are helping biopharma companies redefine cold chain logistics.



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bit.ly/NugolyOCT20SCI

Gartner Report: How Resilient Is Your Manufacturing Network After COVID-19?

Offered by Nulogy

For years, global manufacturing organizations have been lulled into a sense of complacency, prioritizing cost containment and efficiency. This free report, produced by Gartner and presented by Nulogy, helps supply chain leaders build greater resilience into their insourcing and outsourcing strategy to respond to disruptions.



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Case Study: Why Scalability Is So Critical

Offered by Port Logistics Group/Whiplash

The direct-to-consumer model is undergoing a period of unprecedented growth. More merchants are beginning to cut out the middlemen, setting the stage for major disruption to traditional in-store retailing practices. New businesses are increasingly opting for a digital-first approach to avoid high overheads, leaving a lasting impact on consumer habits. Is your brand ready to scale? Read this free case study to find out why scalability is so critical.

podcast



Mo Shearer

How Shippers Can Keep Their Food Supply Chains Moving

GUEST: Mo Shearer, Senior Sales Executive, Trinity Logistics

The fresh and frozen food sector has faced not only capacity shortages at ports during the pandemic, but also surging consumer demand. Mo Shearer, senior sales executive at Trinity Logistics, discusses why shippers should move away from a lean model and build as much flexibility into pickup and delivery dates as possible.



Supply Chain Insights

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video

WHAT TOILET PAPER CAN TEACH US ABOUT SUPPLY CHAINS

Offered by Tedx Talks

bit.ly/SCLearnings

Willy Shih, professor of management practice at the Harvard Business School, uses toilet paper as an example to illustrate what companies have learned about their supply chains during the global pandemic, as consumers stocked up and demand soared for this indispensable, everyday product.



whitepapers



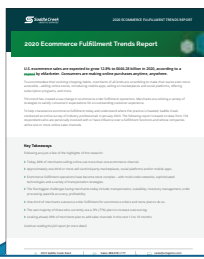
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bit.ly/DHLRecovery

Post-Coronavirus Supply Chain Recovery

Offered by DHL

The post-pandemic world will accelerate changes already in motion and unveil new priorities. Read this whitepaper to help answer pressing questions, such as what the transition to a new normal looks like, the post-COVID-19 impacts on supply chains, and how supply chain management can contribute to future success. Explore innovative supply chain solutions for the near future and what actions need to be taken to build a resilient supply chain.



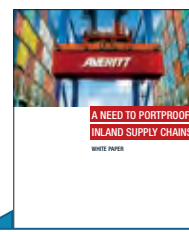
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bit.ly/FulfillmentTrends

2020 E-Commerce Fulfillment Trends Report

Offered by Saddle Creek Logistics Services

Today's consumers are shopping anytime and anywhere, and merchants feel the pressure to deliver. The complexity of e-commerce fulfillment is increasing dramatically as a result. What are merchants' most pressing fulfillment challenges, and how are they addressing them? This research study explores a variety of top-of-mind issues, including network configuration, technology solutions, delivery options, and fulfillment outsourcing.



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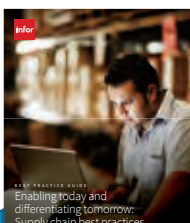
A Need to Port-Proof Inland Supply Chains

Offered by Averitt Express

A variety of factors can have different impacts on your inland supply chain and international shipping practices. Read this free whitepaper to find out how you can reduce your inland supply chain costs with different transportation strategies, including intermodal, and discover best practices for minimizing the length of your inland supply chain, which can cut costs and lead times.

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bit.ly/SCPractices

Enabling Today and Differentiating Tomorrow: Supply Chain Best Practices

Offered by Infor

Those tasked with managing complex supply chains must recognize a shift in which the traditional lines between planning and execution are blurred. With visibility at the forefront, openness and connection can thrive across networks, allowing organizations to witness events in real time and proactively respond. Read this guide to learn what steps to take to successfully manage continuous operations.



DOWNLOAD

bit.ly/SupplyChainBlueprint

Blueprint for Managing Supply Chain Disruptions of Any Size

Offered by E2Open

The impacts of COVID-19 caused hardships for many companies, but others were able to use technology to quickly understand how their businesses were affected and take action. This study outlines how to prepare for future disruptions related to climate, technology, pandemics, economic turmoil, trade wars, and any other challenge. Learning how artificial intelligence and real-time data mitigate extreme conditions can better position leaders to reduce risks and emerge even stronger.



DOWNLOAD

bit.ly/RamcoOCT20SCI

Command Center—The Logistics Grandmaster

Offered by Ramco

Are you struggling with information overload? Learn how a command center in your enterprise resource planning can access multiple sources of real-time data, collate and process relevant data, and provide effective options after scanning all influencers, such as weather, driver safety rating, and regulations. A command center keeps suppliers, partners, and customers informed with timely data about the vehicle and shipment. Read this whitepaper to see how you can make it happen.

podcast



Al Reisman

What You Should Know Before Choosing a Heavy-Haul Carrier

GUEST: Al Reisman, Executive Vice President of Specialized Freight Services, Landstar

Although your supply chain may not require oversize or overweight shipments regularly, there will likely be a time when the need arises. But it isn't as simple as loading it up, strapping it down, and sending it on its way. Al Reisman at Landstar discusses the factors to take into account when enlisting the expertise of a heavy-haul carrier to help lighten the load.



[IN FOCUS]

INBRIEF

New Services and Solutions

>PRODUCTS



> Designed for logistics, assembly, and other applications, the MATE-XT wearable exoskeleton from **Comau** replicates the user's shoulder movements to provide upper body support without batteries, motors, or other failure-prone devices.

Featuring a lightweight carbon fiber structure, it offers 8 different levels of assistance that workers can set quickly without interrupting their tasks.

> **Hyster Company** introduced a lift truck designed for high-density, high-throughput warehouses. Available in 3,000- to 4,500-pound load capacities and single- or double-reach capabilities, the Hyster N30-45ZR/ZDR narrow aisle reach truck delivers reduced energy consumption and faster cycle times.



> **DeltaTrak** launched customized vaccine temperature monitoring solutions compatible with three temperature profiles required for transport, storage, and handling of COVID-19 vaccines. The solutions include certified alarm thermometers, digital data loggers, and real-time monitors for vaccines stored in refrigerators, freezers, ultra-low temperature freezers, and thermal shippers.



> **Qimarox's** automatic stacker makes stacking loaded pallets faster and simpler. The Prorunner mk10-PS pallet stacker takes a loaded pallet off a pallet conveyor and lifts it up. When the next pallet is transported to the same position, the stacker lowers the first pallet again until it is on top of the second. In this way, the Prorunner mk10-PS can create more than 60 pallet stacks per hour.



> The Blulog Inertia Gel Pack Logger, recently introduced to the U.S. market by **BluLine Solutions**, is designed to measure product temperatures, not just the air temperature surrounding items. Known as the "digital chicken," the Inertia Logger features packaging that is food safe and can be easily cleaned.



> The **FreightSnap** dimensioning solution was integrated into **Carrier Logistics' FACTS** system to allow the freight management software provider to improve shipment data. Integrating the automated pallet and parcel dimensioning solution within its system allows LTL carrier customers to charge shippers accurately based on actual weight and dimensions of each shipment.



> The new MCL80RCB LED Combination ID Light Bar & Utility Light from **Optronics International** can illuminate a wide area below and behind it with white LED light when mounted on trailers. Incorporating two 7-diode white LED utility lights, the lamp has a thin, streamlined body that measures 15.5 inches in length, 1.3 inches in width, and 0.75 inches in thickness, including its attached, closed-cell foam gasket.



> Zoneworks by **Rite-Hite** offers EZ Employee Separation Barriers for workers who cannot socially

distance more than 6 feet. These customizable barriers are available as a floor unit model (*pictured, left*) or a table top unit. The floor unit measures 48 inches wide by 79 inches tall and encompasses a clear panel that is 44 inches wide and 72 inches tall.

> The Ferrowave Flag from **Confidex** is a printable UHF RFID label designed for metallic parts. Suitable for automotive parts tracking as well as other industrial applications, the label can be easily attached to challenging metal surfaces to enable item-level tracking.

>SERVICES

> **Rhenus Group** expanded its air and ocean division for the Americas to include Mexico City. The new branch offers cross-border services to facilitate trade between the United States and Mexico. End-to-end services include air and ocean freight, trucking, cross-boarding, and customs clearance.

> **Avetta**, a provider of supply chain risk management solutions, partnered with Mulligan Funding to provide U.S. supply chain companies

with options to secure loans for their businesses. Avetta clients and suppliers can now take advantage of Mulligan Funding's services through the Avetta Marketplace.

> **Dachser Americas** introduced its alternative solutions response team, which serves as an extension of its recently launched customer solutions desk. Created in response to the recent ocean carrier space shortage and route suspensions in and out of South Asia, the team addresses shippers' critical capacity challenges.



> **SeaCube Containers** acquired 200 Carrier Pods monitored by Sensitech to help address the increase in demand for refrigerated storage capacity and cargo visibility in support of COVID-19 vaccine distribution. The systems offer reliable deep-frozen container refrigeration performance with telematics, data analytics, and cargo monitoring capabilities.

INBRIEF

> J.B. Hunt Transport Services

added temperature-controlled services to its digital freight matching platform, used by more than 10,000 carriers. Shippers are able to select from a variety of temperature ranges when using Shipper 360 to create a shipment, which can be booked in the platform in as little as three minutes.

> **DSV**, a global logistics firm, is building a new facility in Lancaster, Texas. The distribution and office complex will include more than one million square feet of warehouse space. This site represents the first location in the United States where DSV has its three divisions—air and sea, road, and solutions—under one roof.

> **Averitt Express** expanded its facility in Laredo, Texas, adding 35,000 square feet of distribution and fulfillment space. The positioning of the distribution and fulfillment center in Laredo allows Averitt to provide shippers with quick access to freight staging, inventory management, and consolidation and deconsolidation services that would be typically handled farther north or south of the U.S.-Mexico border.



> **RLS Logistics**, a provider of cold chain solutions, is developing an 83,000-square-foot temperature-controlled facility in central Massachusetts. This site will be the newest addition to the RLS Partnering Regional Operator network of family-operated cold chain experts and is scheduled to open in the fourth quarter of 2021. The facility will provide food distributors, processors, and importers in the New England region with cold storage capacity and access to RLS' temperature-controlled LTL consolidation programs throughout the region.

> **ODW Logistics** acquired a 193,000-square-foot



> **Honor Foods**, a Burris Logistics company, moved its Philadelphia operation to a new warehouse at 5505 Tacony Street. The facility provides the foodservice redistribution company with the capacity to broaden its product portfolio to better serve its nearly 800 customers in the Northeast and mid-Atlantic states.

distribution center in the Chicago area with temperature-controlled facilities for frozen foods and other cold-chain products. ODW will provide supply chain services to Great Kitchens Food Company, a maker of private label take-and-bake pizzas. ODW signed a long-term lease and agreement to operate the distribution facility, where there is capacity to handle additional cold-chain customers.

> Small- and mid-sized businesses can meet customers' high shipping expectations with the new **Pitney Bowes Same-Day Delivery** service through its cloud-based SendPro Online sending platform. Pitney Bowes Same-Day Delivery provides access to a curated network of Pitney Bowes service providers through a single shipping platform.

> **Port Logistics Group** partnered with Locus Robotics to deploy more than 150 autonomous mobile robots in its fulfillment process at its Chino, California, facility. The robot-driven warehouse automation system will increase warehouse productivity and order pick accuracy, and improve workplace ergonomics and safety.

> **Crane Worldwide Logistics** extended its contract logistics services in Europe, the Middle East, and Africa. Headquartered in Houston, Texas, the company opened new warehouse facilities in the Midlands, United Kingdom; Dublin, Ireland; and Johannesburg, South Africa, and additional space in Tilburg, the Netherlands. The company also opened its doors in Qatar, with a new Doha location.

>TECHNOLOGY

> **InMotion Global** embedded DAT's RateView pricing tools within AscendTMS, its free transportation management system software. Users of AscendTMS can now use RateView's predictive and historical pricing tools directly within AscendTMS to optimize profits and minimize costs on any individual load or lane, using near real-time pricing data.

> Brand owners and retailers can now document the chain of custody from component origin to importer of record with a digital traceability solution from **Logility** and

New Generation Computing.

This solution ensures companies can trace chain-of-custody through all tiers in the supply chain while storing and managing all supporting documents related to every transaction between all supply chain trading partners at every level.

> 3PL **Evans Transportation**

launched its Evans 2.0 logistics management platform, which includes the Evans Integration Hub, the Evans Rating Engine, and its Freight Pay & Audit Platform. These tools aim to streamline processes, increase speed and accuracy, and provide real-time visibility and

> **ThinkIQ** added functionality to its SaaS Manufacturing platform, including user interface components that let shippers build custom dashboards to gain a better understanding of their manufacturing data. The platform integrates into existing IoT infrastructure to help manage supply chains as well as manufacturing processes.

transparency on costs for shippers.

> Shippers can now receive the latest information on rates for ocean and air freight as well as market insights with the newly connected data between the TenderEasy procurement

platform and Xeneta's databases. **TenderEasy**, Alpega's cloud-based freight procurement solution, is partnering with **Xeneta**, a freight rate benchmarking and market analytics platform for real-time and on-demand ocean and air freight rates.


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INBRIEF

> **MPO and ALKIMIUS GROUP** are teaming up to help shippers in Latin America digitally transform their supply chains. MPO-ALKIMIUS offers end-to-end supply chain transformation solutions on a single orchestration and execution platform to help companies drive efficiency, streamline network processes, and boost multi-party data quality.

> The **Conqueror Freight Network** implemented Shipco LCL rates in its TMS, FreightViewer. Conqueror's partnership with freight consolidator Shipco enables FreightViewer users to directly access LCL rates in more than 30 countries.

> **Vecna Robotics'** new autonomous counterbalanced fork truck is an intelligent and integrated pallet-handling solution. The first in the company's Silverback Series of counterbalanced fork trucks, this autonomous mobile robot offers vertical lift of up to 72 inches to help distribution, warehousing, and manufacturing organizations move a wider range of payloads and pallet types.

> Shippers can access key transportation performance indicators via dashboards, scorecards, reports, and maps to support continuous improvement through

Transportation Insight's enhanced Insight Fusion, an interactive business intelligence engine. The platform helps shippers derive actionable insights from their parcel, LTL, and truckload shipping data.

> **Blujay Solutions** released version 21.0 of its transportation, distribution, and compliance software applications to enable shippers to continue to build resilient supply chains. The latest release provides new software and partner integrations, improved user experiences, the most current compliance updates, and other expanded capabilities like contactless operations.

> **Trelleborg Sealing Solutions** unveiled an automated inventory management system that enables OEMs to better manage their C-class inventory for seals, O-Rings, and other smaller components needed for the manufacturing process. Trelleborg's IntelliStok

program takes care of automatically ordering these smaller components, helping manufacturing human resources managers with labor costs and safety protocols.

> **Penske Logistics** added new end-to-end mobile automation tools to its freight brokerage solutions for increased shipment visibility. With the addition of the Trucker Tools load tracking solution, Penske customers are provided with intelligent smartphone and ELD solutions. Geofencing technology provides near real-time visibility of shipment arrivals and departures and gives electronic proof-of-delivery documentation on a smartphone.

> **Vantiq** created an innovation accelerator with **Infosys**, a provider of next-generation digital services and consulting, to help customers quickly build real-time applications for managing digital supply chains. Using pre-built digital domain and development



> The Intelli-Guide allows materials handling operators to automatically send a load to different pre-programmed areas in a facility with the push of a button. Introduced by **Columbus McKinnon**, a designer and manufacturer of motion control products and technologies, the Intelli-Guide Auto-Dispatch System uses automation programming integrated with motors and brakes.

frameworks, the accelerator enables customers to rapidly develop real-time applications in logistics and distribution optimization, connected maintenance, , real-time compliance, and safety management.

> **Kenco Logistics** launched an e-commerce platform to support online brands. This technology stack was designed to seamlessly connect Kenco's e-commerce customers to sales channels and supply chain partners that support accelerated growth in a cost-effective and resource-light environment.

> **GEODIS** launched a visibility platform that brings together data from multiple systems to create a connected supply chain. GEODIS Visibility provides a control tower view integrating multiple operational systems—warehouse management systems, transportation management systems, labor management systems, and yard management systems—to create a streamlined view of shipments across all modes of the supply chain.



>TRANSPORTATION

> **CMA CGM** ramped up its capacity assigned to ocean lines between Asia and Europe. The capacity boost will be provided by a new class of nine 23,000-TEU LNG-powered vessels assigned to Asia-Europe trade, three of which are already in service; two extra loaders operating on routes between Asia and Europe, providing more than 9,000 TEUs in total capacity; and no blank sailing departures on the French Asia Line 1, which connects Asia to Europe in an 84-day rotation, and French Asia Line 3, which makes a weekly export call in Le Havre.

> Specializing in parcel transports between China and Europe, the new joint venture **Gebrüder Weiss Express China** serves European and Asian e-commerce companies. Gebrüder Weiss and Chinese logistics company Global Freight System set up the joint venture to pool their expertise in Europe and Asia. Additionally, it allows Gebrüder Weiss to boost its activities on the New Silk Road.

> Ocean shippers can expect increased capacity from members of **THE Alliance**, which is enhancing its service setup in April 2021 with better frequency, more competitive transit times, and improved port coverage. For example, they will launch the East Coast Loop 6, the first service within THE Alliance network to directly connect the U.S. Gulf with major ports in Asia. Another change is



PHOTO: STOCKHOLMS HAMNAR/PER-ERIK ADAMSSON

> Sweden's newest major port is now fully operational, opening on time and on budget. **Stockholm Norvik Port** makes it possible for goods to be transported more sustainably by sea, directly to and from the growing Stockholm region, Sweden's largest consumer area.

the deployment of larger ships for the most frequented services.

> **Schneider** expanded its Bulk Express Intermodal service into Canada. Shippers with inbound and outbound Canadian freight can rely on Schneider Bulk Express Intermodal to deliver truck-like service (with standard transit times plus one or two days). Bulk intermodal ships bulk loads by rail, with local and regional drivers handling the final dray. The containers have the ability to haul up to 45,600 pounds of specialty chemical and liquid payloads.



> **Cathay Pacific Cargo** launched a freighter service between Hong Kong and Riyadh, Saudi Arabia, in January 2021. The new scheduled flights address the strong demand for e-commerce shipments and other general cargo such as garments. Flights operate once per week every Tuesday with a stopover in Dubai on the return flight to Hong Kong.

> **APL Logistics** expanded its OceanGuaranteed service in the trans-Atlantic trade lane, offering its expedited, day-definite LCL service from Europe to North America. The service will initially be from Bremerhaven, Germany, to Norfolk, Virginia, with door delivery to virtually any ZIP code in the continental United States.

Why Is Our Podcast #1 in Logistics? We've Got the Top Thought Leaders!



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12

Essential Podcasts from Inbound Logistics

Future-proof operations, jump e-commerce hurdles, perfect your digital transformation strategy, and more with these must-listen episodes featuring leaders who provide first-hand insight on the latest logistics news.

HOW UPS USES DISRUPTIVE TECHNOLOGY TO REDEFINE HEALTHCARE LOGISTICS

GUEST: Dan Gagnon, Vice President, Global Healthcare Strategy and Marketing, UPS



For the healthcare sector, supply chain management can be a matter of life or death. As part of its business transformation, UPS initiated a healthcare and life sciences unit to oversee new sensing and monitoring solutions for critical healthcare shipments. Hear about the company's undertaking and how they navigated COVID-19.

HOW TO WEATHER THE AMAZON EFFECT

GUEST: Bob Malley, Chief Executive Officer, Pierbridge



E-commerce has fundamentally changed consumer behaviors, and no platform has played a bigger role than Amazon. The so-called Amazon Effect dramatically raises consumers' expectations while arguably lowering their patience. This is how parcel shippers can adapt and stay competitive.

STEPS TO ENSURE SAFETY AND COMPLIANCE FOR HAZMAT TRANSPORTATION

GUEST: Mike Cobb, Vice President of Safety and Compliance, Landstar Transportation Logistics

Safety becomes an even bigger priority when it comes to shipping hazardous materials, and that responsibility has to fall evenly across carriers, shippers, and owner-operators to minimize potentially dangerous mishaps. Follow these useful tips to stay out of the danger zone.



YOUR SUPPLY CHAIN MAY BENEFIT FROM A CONTROL TOWER APPROACH

GUEST: Lori Harner, Senior Director, Product Marketing, E2open

The more complex the supply chain, the more moving parts there are—and that's a lot of data to monitor. When shippers have to analyze that information, taking a holistic approach with a control tower is the way to go. Find out the possible benefits for your business.



NAVIGATE GLOBAL DISRUPTION AND FIND WAYS TO PROSPER

GUEST: Brent Yeagy, President & Chief Executive Officer, Wabash National

Despite the ripple effects of the pandemic, some shippers managed to not only weather the storm, but thrive in spite of it. Wabash National managed that feat by recognizing the changing dynamics of the transportation marketplace and adjusting to meet disruptions head on. Learn how prioritizing employee safety ensured continued service for their customers.



COGNITIVE COMPUTING VIA IBM WATSON COULD BE THE NEXT BIG REVOLUTION

GUEST: Joanne Wright, Vice President, IBM Supply Chain



What if you could scan your entire supply chain, pinpoint problem areas, and stop disruptions before they even happen? It sounds impossible, but IBM Watson Supply Chain could do just that. Here's how cognitive computing is poised to be a game-changer for supply chain management.

DIGITIZING TRANSPORTATION: HOW TO IMPROVE VISIBILITY

GUEST: Jason Gillespie, Senior Director of Continuous Improvement and Innovation, DHL Supply Chain



Transportation providers have shifted gears in response to the pandemic, but with digitization trends already on the rise, it may be more accurate to say that transportation is simply adapting to the times. Keep an eye on these trends to improve visibility.

DEMAND CHAIN MANAGEMENT: THE NEXT REVOLUTION IN LOGISTICS

GUEST: Brian Bourke, Vice President of Marketing, Chief Growth Officer, SEKO Logistics

Increased e-commerce shopping has forced retailers to rethink the way they do business as they shift their focus to creating value for consumers. Learn how the new world of retail revolves around the shopper.



FUTURE-PROOFING SHIPPERS AGAINST DISRUPTION WITH DIGITAL TRANSFORMATION

GUEST: Dr. Martin Verwijmeren, Chief Executive Officer, MPO



Disruptions happen, but the shock caused by COVID-19 has shippers looking to technology to not only manage the immediate impact, but future-proof their operations for years to come. Assess your level of preparation and learn how comprehensive orchestration can ease fears and achieve digital transformation.

WHAT SUPPLIERS AND RETAILERS CAN DO TO ALLEVIATE SUPPLY CHAIN VOLATILITY

GUESTS: Brian Meents, Executive Vice President of Account Management, Sales, and Marketing; Dan Sanker, President of Retail Supplier Solutions; Hub Group

Amid a volatile economic landscape, businesses continue to seek different solutions to find stable ground for themselves and their customers. What can suppliers and retailers do to better position themselves to alleviate supply chain disruption? Here's how the retail sector can respond.



DIGITAL TOOLS FOR BETTER MANAGING RISING TRANSPORTATION COSTS

GUEST: Gary Barraco, Senior Director, Product Marketing, EZopen

Leading e-commerce platforms boost consumer demand, leading to rising transportation costs. This demand chain focus means shippers have to better manage an already complex supply chain by using new digital tools to monitor key data. Discover the opportunities for efficiency in your supply chain.



STAYING RESPONSIVE TO THE EVOLVING DEMANDS OF A GLOBAL CONSUMER MARKET

GUEST: Brad Jacobs, Chief Executive Officer, XPO Logistics



A dynamic, global consumer market with increasingly challenging demand signals requires an agile, flexible, and responsive supply chain. Innovative technologies and software can help, but should businesses make that investment?

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THE **TEN** MOST READ Articles OF 2020

From impressive pandemic pivots to imagining a workforce of the future, take a look back at the *INBOUND LOGISTICS* content that got you buzzing in 2020.

1



COVID-19 RESETS: LOGISTICS DRAWS THE LINE

JUNE 2020

How the pandemic brought out the best in many people as well as the logistics and supply chain organizations they work with and for.

bit.ly/COVIDResets

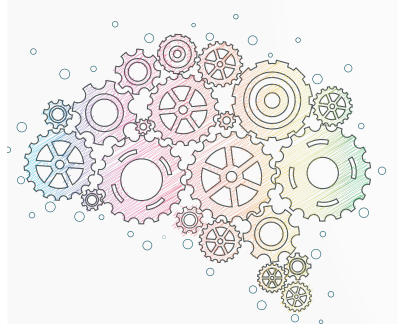
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SMART WAREHOUSES BOOST THEIR IQ

MAY 2020

Working in tandem with the Internet of Things, artificial intelligence, drones, and other advanced technologies, warehouse management solutions can enhance speed and accuracy.

bit.ly/WarehouseIQ



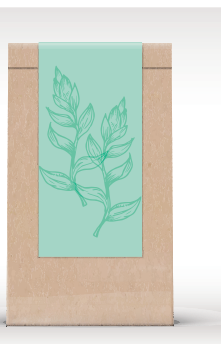
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LOGISTICS WORKFORCE OF THE FUTURE

JULY 2020

As North American manufacturing enters a “new normal,” how will the logistics and supply chain workforce evolve in a post-pandemic world?

bit.ly/TheFutureWorkforce



FOOD PACKAGING: THAT'S A WRAP

DECEMBER 2020

Environmental impacts, costs, and technology work up an appetite for food packaging innovation. From packages made of cornstarch to paper liquor bottles, nontraditional packaging is on the menu.

bit.ly/NewFoodPackaging

3

TRUCKERS GIVE IT THE GAS

SEPTEMBER 2020

Shippers look for truckers and partners that can shift gears quickly and provide dependable performance. Here are the strategies the best trucking companies use to meet—and even exceed—shipper expectations.

bit.ly/GiveItTheGas



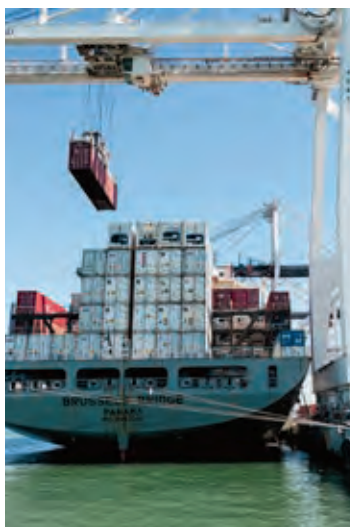
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6 15 DOWN & DIRTY WAYS TO GET GREEN NOW

JUNE 2020

Ready to reduce your carbon footprint and cut waste in the supply chain? These 15 practical tips will help you plant the seeds.

bit.ly/GetGreen15



7

MARITIME LOGISTICS: AUTOMATE & INNOVATE

OCTOBER 2020

These North American seaports load up on automation and innovation for faster and safer operations, which are proving all the more important in today's unprecedented business conditions.

bit.ly/MaritimeAutomation

8

RESHAPING THE SUPPLY CHAIN

JANUARY 2020

Three big paradigm shifts will likely reshape supply chains in the coming years: technologies that promote more efficient transformation, supply chains optimized for sustainability, and digitization.

bit.ly/ReshapingSC



3PLs COMING TO THE RESCUE

JULY 2020

When supply chain and logistics trouble brews, shippers send out a signal to third-party logistics providers for their expertise, technology, and dedication to customer service.

bit.ly/3PLsRescue

10

SHAKING UP SUBSCRIPTION SERVICES

AUGUST 2020

During the lockdown, some subscription services unboxed a surge in demand while others were forced to fold in their flaps. Read how successful services continue to deliver the goods.

bit.ly/ShakeUpSubs



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Where to Go, What to Click

Connect with industry peers, join thought-provoking discussions, and discover the future of supply chain.

VIRTUAL

FEB 22-25, 2021

Logistics Business Exhibition

logisticsexhibition.com

This digital exhibition is a platform for connecting logistics, technology, transportation, warehousing, and materials handling. Exhibitors can present their solutions to potential customers and participate in scheduled as well as spontaneous video meetings. Choose from virtual hall categories such as automation systems, packaging and pallets, software and computing, and warehousing equipment.

FEB 23-24, 2021

TechXchange

retailcpg21.isg-one.com

Join TechXchange's retail and consumer packaged goods-focused event to discover what it takes to prepare your organization for a new era of commerce. Through thought-provoking keynote presentations and interactive panel sessions, attendees gain an understanding of how to upgrade their operating models, identify and predict new patterns of consumer behaviors, and scale through disruption.

APR 12-16, 2021

ProMatDX

promatshow.com

Discover innovative solutions to move your business forward as the industry's thought leaders showcase their latest manufacturing, distribution, and supply chain equipment and systems at this digital event. Manufacturing and supply chain professionals come together to take their supply chain to the next level of success.

MAY 3-5, 2021

WERC DX

bit.ly/WERC2021

This conference is designed to curate solutions for the complex problems that distribution logistics professionals face today. From lockdowns to technology changes and achieving sustainability, industry thought leaders discuss the various challenges arising from the explosive growth of e-commerce retail and increasing demand for a fully integrated, omnichannel customer experience.

MAY 11-13, 2021

American Supply Chain Summit

supplychainus.com

Join senior-level executives for thought-provoking case



studies and key ideas to put into practice. Access live-streamed sessions, participate in real-time chats, and address your most pressing questions. Attendees have the ability to select which sessions to stream and have instant access to all presentations and videos. Download materials and handouts to store in your "digital briefcase," and visit the virtual exhibit hall to identify key services that can enhance your operations.

MAY 18-20, 2021

ISM World

ismworld.org

This virtual procurement and supply chain conference is an immersive three-day experience that provides a 360-degree view of the possibilities the future could hold for professional development and organizational success. Global industry practitioners and thought leaders network,

collaborate, and discuss future trends in the profession.

JUN 8-10, 2021

GS1 Connect

gs1connect.gs1us.org

GS1 Connect offers both live-streamed and on-demand digital content that focuses on adapting to supply chain and e-commerce challenges. Choose from tracks including healthcare, grocery, retail, and technology. Industry leaders share success stories leveraging GS1 standards and how to solve specific business challenges. The expanded program features a pitch competition, discussion groups, and a virtual classroom.

OCT 13-15, 2021

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on-demand sessions throughout the event. Expert speakers provide insights into hot topics in the global maritime industry, including the impact of COVID-19, an update from the U.S. Coast Guard on IMO 2020 compliance and enforcement, and what effect automation in the workforce will have on the shipping industry.

IN PERSON

MAR 23-26, 2021
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Anuga FoodTec

anugafoodtec.com

This hybrid conference format offers food and beverage professionals both an in-person trade show experience as well as virtual learning sessions. Join in personal exchange and intensive networking to make connections and bring your business forward. Explore the latest solutions and technologies at the trade show, which can help set you up for long-term success.

APR 26-27, 2021
SPOKANE, WA

Northwest Food & Beverage World

bit.ly/FoodBeyWorld

This food manufacturing trade show hosts exhibits featuring the latest technologies and innovative food and beverage solutions, valuable networking with new and established colleagues, and interactive educational sessions. Get technical training and join discussions on food safety, the industry's COVID-19 response, energy savings, corporate responsibility, and more.

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 packed 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, including drivers, fleet owners, owner-operators, beginners, and chief executive officers.

AUG 17-20, 2021
ORLANDO, FL

Link: The Retail Supply Chain Conference

bit.ly/LinkConference

This conference gathers top executives in the retail supply chain to network and learn. This premier 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 1-2, 2021
PHILADELPHIA, PA

Home Delivery World

bit.ly/HomeDelivery2021

Home Delivery World focuses on last-mile logistics solutions, aiming to uncover innovative solutions for retailers, grocers, consumer packaged goods companies, and third-party logistics providers facing challenges across the supply chain, from warehousing to fulfillment to the last mile. Establish connections with



industry peers from all over the world, and get access to curated content from innovators and disruptors in the home delivery space.

SEPT 14-16, 2021
INDIANAPOLIS, IN

FTR Transportation Conference

ftrconference.com

This conference brings together many leading experts in the transportation industry. Fundamental changes are on the horizon for freight transportation, and these sessions facilitate discussions on how companies are dealing with these changes. Not only will attendees be able to network with transportation professionals from all parts of

the supply chain, but they will return from the conference with actionable information for their businesses.

SEPT 28-30, 2021
LAS VEGAS, NV

RLA Conference and Expo

rla.org/event/125

The Reverse Logistics Association (RLA) presents industry thought leaders who discuss best practices for navigating the demanding world of reverse logistics, especially during this unprecedented disruption. Attend powerful keynotes and content-driven panel discussions, and participate in an ample amount of networking opportunities.



These events were scheduled to proceed as of press time.



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Planner Profiles will connect you with the best partners. An exclusive online RFP service lets you get information specific to your transport or logistics challenge. Describe your challenge or pose a question, and select the solutions providers you want to query. Your request is immediately sent to the market leaders who have agreed to respond to you quickly.

inboundlogistics.com/digital

A digital and mobile version of the Logistics Planner—optimized for your desktop or mobile device. Download the entire January edition featuring all the great content, as well as the Planner section to access and use all the information on the profiled companies.

iTunes / Google
download app

App editions of the Logistics Planner are available by searching for "Logistics Planner" in the iTunes and Google markets.

iOS: bit.ly/ILMagApp

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3PL Central

222 N. Pacific Coast Hwy., Suite 1500 • El Segundo, CA 90245
888-375-2368 • info@3plcentral.com • 3plcentral.com

3PL Central is the leader in cloud-based warehouse management system (WMS) solutions built to meet the unique needs of the 3PL warehousing community. Serving as the backbone of our customer's operations, our platform quickly transforms paper-based, error-prone businesses into service leaders who can focus on customer satisfaction, operate more efficiently, and grow faster.

Offering a comprehensive warehouse management platform, we make it easy for 3PLs to manage inventory, automate routine tasks, and deliver complete visibility to their customers. As the proven industry leader for well over a decade, 3PL Central accurately manages billions of dollars in inventory and processes more than one million orders a week from any of our customers and their customers' systems.



3PL Central is one of the most experienced and connected organizations in the 3PL and warehousing industry. Our platform, 3PL Warehouse Manager, is positioned at the center of a powerful ecosystem of customers, partners, and developers with the goal of enabling intelligent distribution and driving growth. Our platform is used daily by over 10,000 logistics professionals.

Whether you're a 3PL owner looking to grow your business, or an operations manager looking to improve day-to-day workflows with best practices, our platform will help you:

- Increase warehouse efficiency via task automation, pre-wired integrations, and cloud-based inventory management.
- Embed billing processes into your operations by customer, ensuring you are fully paid for all the work you perform.
- Transform into a paperless warehouse by eliminating manual input and streamlining workflows and operational processes.
- Provide complete visibility to your teams and customers with accurate, real-time information 24/7.
- Better serve warehouse customers so you can become a 3PL they will love.

Contact us today for a demo and learn how you can partner with 3PL Central.
Visit: info.3plcentral.com/my-demo



A.N. Deringer, Inc.

64 North Main St. • St. Albans, VT 05478
888-612-6239 • anderinger.com



Jake Holzscheiter
President and CEO

Services:

- Customs Brokerage
- Freight Forwarding & Logistics Solutions
- Customs & Trade Consulting
- Warehousing & Distribution
- USDA Meat Inspection

Over 30 offices located from Maine to Blaine, WA, and key air and vessel ports throughout the US.



Personalizing Your Logistics



www.anderinger.com

Deringer provides Customs brokerage, freight forwarding, Customs and trade consulting, warehousing and distribution, and meat inspection services. Maintaining local representation at major ports, strategically located along the northern border and at major air and vessel ports nationwide, customers are provided with a single point of contact. A flat organizational structure allows easy access to our President and leadership team. Moreover, Deringer's culture includes a strong commitment to the ongoing success of our business partners. Welcome to the Deringer Difference.

Deringer's Customs Brokerage Services

We have 100 years of experience, and our longevity in the industry means customers benefit from the expertise, service, and innovation that comprise the Deringer brand. When choosing a Customs broker, consider that we are renowned as a forerunner of many new and developing trade programs. Members of Deringer's leadership serve on various US Customs & Border Protection and trade association boards and committees. Customers benefit directly from these partnerships as they are kept current on the most pressing trade regulations. Additionally, we custom fit our solutions to each unique client. That's why Deringer has a 99% retention rate among our Top 500 customers, with less than 1% leaving due to customer service-related issues.

Deringer's Freight Forwarding Services

Facilitating the movement of goods throughout the world since 1919, Deringer is an IATA-licensed cargo agent, an FMC-licensed ocean transportation intermediary, and an NVOCC. Deringer arranges and manages freight forwarding, consolidation, deconsolidation, and distribution of freight throughout its journey. Offering LCL and FCL transportation, we scale services to fit clients' needs. Partnering with Deringer for Customs brokerage and freight forwarding means a seamless delivery and reduced risk of demurrage, detention, and document transfer fees.

Deringer's Consulting Group

Deringer Trade Advisory Group (TAG) supports clients by providing a full complement of import and trade consulting services. We partner with our clients to develop effective and sustainable import compliance programs. These programs reduce the risk of regulatory penalties and seizures, optimize the management of duties and fees, and improve process efficiencies and predictability. We assist clients with CTPAT certification, provide customized training and guidance on classification, valuation, and country of origin determination, as well as prepare binding rulings and prior disclosures on their behalf. Additionally, our group supports customers in finding cost savings by identifying special trade program eligibility and managing duty refund programs.

A3 Freight Payment

3150 Lenox Park Blvd., Suite 400 • Memphis, TN 38115

Tel: 901-759-2966 • Fax: 901-759-2940 • info@a3freightpayment.com • a3freightpayment.com

A3 Freight Payment provides customized transportation spend management solutions. Our solutions help companies normalize and aggregate data, automate transportation audit and payables, identify transportation spend reduction opportunities, manage shipment execution, file claims, and enhance supply chain reporting and analysis.

Headquartered in Memphis, A3 Freight Payment is led by an experienced group of industry veterans who have designed, implemented, and overseen transportation spend management solutions for some of the largest shippers in the world.

Our solutions incorporate the best practices gathered from industry experts who have worked with multiple providers and hundreds of Fortune 1000 customers. We are experts at transportation spend management...it is our sole focus and core competency.



A3 Freight Payment works with each client to build a unique solution tailored to meet your specific transportation spend management needs including:

- Data Aggregation & Normalization
- Global Freight Audit & Payment
- Transportation Spend Management
- Claims Management
- Business Intelligence Tools
- TMS Functionality
- Systems Integration

Companies choose A3 Freight Payment because of our:

Business Strategy—One of a select few, not one in a million

A3 Freight Payment partners with large volume shippers who seek a high degree of customization, exceptional customer service, reliable processing, and minimum resource involvement in managing their solution. This strategy promotes a flat org structure, controlled growth, equal prioritization of customers, and scalability of operations.

Approach to Processing—A different approach, a better result

The A3 Freight Payment solution incorporates the best practices gathered from industry experts who have worked with multiple providers and hundreds of Fortune 1000 customers. Our unique processing model provides a managed solution that eliminates the pitfalls associated with traditional freight payment solutions and provides 100% transparency to you, to our staff, and to your logistics providers.

Customized Solution—One solution does NOT fit all

Your company has internal systems and processing constraints that are unique to your business. A3 Freight Payment partners with you to understand your unique needs and develop a custom and flexible solution that incorporates best practices while working within your constraints.



Dedicated Resources—A truly managed outsource solution

Each A3 Freight Payment client has a dedicated, experienced team of resources led by an Account Manager who is the single point of contact for you. The account manager and their team are empowered to tap into company resources to meet the needs of the client and are solely accountable for management of all processes. This “team concept” provides you with exceptional customer service and produces a truly managed solution.

Experience—Our knowledge ensures a smooth transition

The A3 Freight Payment team has a track record of designing, implementing, and managing global transportation spend management solutions for some of the largest shippers in the world. This experience is crucial to the successful development and deployment of a solution while ensuring a smooth transition for you.



Alliance Shippers Inc.

Corporate Office: 516 Sylvan Avenue • Englewood Cliffs, NJ 07632
201-227-0400 • info@alliance.com • alliance.com

Services and Solutions:

- The Perfect Shipment® Program
- Intermodal: USA, Canada and Mexico
- Over-the-Road Transportation
- Critical Capacity Solutions
- International Transportation Service
- Temperature Control
- Warehousing Services
- Dedicated Fleet



Founded in 1977, Alliance Shippers Inc. has grown to become one of the largest privately owned providers of global shipping services. With a range of divisions—from temperature control to intermodal rail services—Alliance Shippers Inc. can combine a number of services for each customer. By tailoring services and customizing routes and shipping methods, Alliance Shippers Inc. ensures efficient and cost-effective transportation.

While offering worldwide shipping services, Alliance Shippers Inc. is best known for its absolute dedication to customer service. From the sales level to operations—every customer receives dedicated resources and personnel. At Alliance Shippers Inc., quality assurance specialists and communications experts manage the very latest shipping and tracking technologies to ensure that customers have instantaneous access to the information they need.

All of these factors drive Alliance Shippers Inc. to provide The Perfect Shipment®. It's Alliance Shipper's company-wide commitment to the following four goals:

- Pick up the shipment on time
- Deliver the shipment at the time requested
- Deliver the shipment without exception
- Provide an accurate freight bill

Every shipment at Alliance Shippers Inc. is tracked automatically by a proprietary and state-of-the-art TMS system. Multiple measures and checkpoints, from origin to destination, help guarantee on-time pickup and delivery. Whether at the origin, on the rail, on the highway or at the destination dock, Alliance Shippers Inc. keeps track—so their customers can keep on schedule.

As an early supporter and currently certified member of the EPA's SmartWay program, Alliance Shippers Inc. is committed to responsible environmental practices, which include maximizing fuel efficiency. Alliance Shippers Inc. understands that smart business methods are not only good for the environment—but also good for their customers' bottom line.

Alliance Shippers Inc. believes it is one thing to promise high standards. It is something quite different, however, to commit to excellence by monitoring and grading yourself with serious performance metrics. At Alliance Shippers Inc., it's a standard practice. By consistently monitoring, measuring and modifying its services, Alliance Shippers Inc. is committed to constant improvement.



Alpega

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877-763-3240 • infoNA@alpegagroup.com • na.alpegagroup.com

End2End TMS Solutions for Today's Supply Chain

Transform your logistics operations with Alpega TMS solutions:

- Multi-tenant cloud-based solutions
- Reduce operational costs via automation of transportation workflows
- Connect supply chain partners to create your logistics ecosystem
- One collaborative platform with visibility across logistics networks
- Shared data for real-time decision making
- Smarter procurement and improved compliance
- Know your true freight costs
- Improve cashflow via faster invoice processing
- Measure KPIs and improve customer satisfaction



alpega

Alpega is a global provider of end-2-end cloud-based Transportation Management Systems (TMS). Alpega enables shippers, logistics service providers and carriers to collaboratively manage all transportation activities—from tactical to strategic. By digitizing transportation operations, Alpega TMS solutions transform local and global supply chains into collaborative ecosystems—bringing transparency and efficiency to all trading partners involved.

Connect supply chain partners across your logistics networks via a single SaaS platform to collaboratively manage transportation sourcing, planning, optimization, execution, settlement and analysis.

Alpega's modular design and ease of integration address the varying needs of companies of all sizes and supply chain complexity. Our solutions can stand alone, integrate with existing technologies, and scale as needed. Easily adjust your logistics capabilities to align with the demands of your business.

Offered on a transactional or subscription basis, customers pay only for what they use—for a low TCO and rapid ROI.

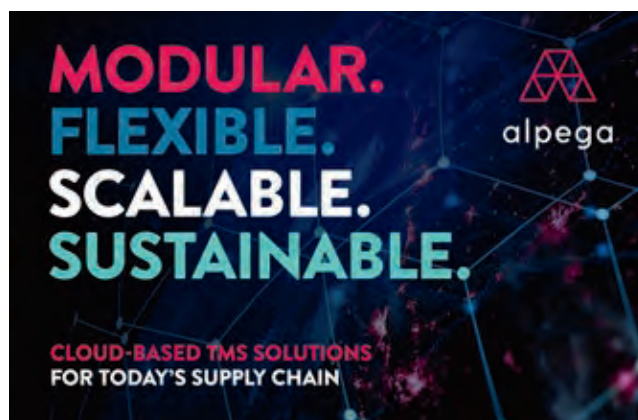
Whether you're focused on road only transportation or optimized multi-modal and multi-leg planning and execution for global and complex networks, Alpega TMS solutions enable efficient transportation management.

Alpega Solutions

Alpega TMS - Modernize transportation processes, collaborate with trading partners, and create your logistics ecosystem. Alpega TMS addresses Gartner Levels 1-5 of TMS/supply chain complexity.

Planning & Optimization - Integrated strategic, tactical and dynamic transportation planning and optimization.

Load Tendering - Automate transport orders, tender loads and centralize related documentation efficiently.



Real-Time Visibility - Live tracking for complete shipment visibility with ETAs and notifications.

Mobile Solutions - Stay up to date through real-time shipment updates, including exceptions.

Freight Cost Management - Monitor and settle invoices, handle contract management, and reconcile surcharges or accessorial online.

Analytics & Reporting - Actual and historical transportation data at your fingertips for actionable insights and smarter decisions.

Dock Appointment Scheduling - Schedule appointments online 24/7 for inbound and outbound pickups and deliveries across locations.

Freight Procurement - Run RFQs, analyze freight rates, and conduct spot bidding without spreadsheets.

Reusable Packaging Management - Manage returnable transport packaging asset levels & movements between network partners.

Through collaboration with trading partners, increased visibility across transportation networks, and improved asset utilization, shippers can reduce freight spend and carbon footprint—providing an efficient, sustainable logistics IT solution for today's supply chain.

Alpega's user community is present in 80 countries worldwide.

Approved Freight Forwarders

14777 Don Julian Rd. • City of Industry, CA 91746
888-679-5099 • approvedforwarders.com/planner



Randy Tutor
*Vice President /
Director of Sales*

At Approved Freight Forwarders, our expert logistics team specializes in Hawaii and Puerto Rico while leveraging advanced technology to tailor shipping solutions that will meet and exceed your specific requirements. We work diligently to ensure that your shipment arrives on time and intact, with constant communication.



Entrusted with the World's Freight

Since 1991, Approved has been your link to the Pacific, Puerto Rico and around the world, providing ocean freight consolidations, air freight and over-the-road transport of goods and commodities. As a Top 100 3PL Provider, we are the only freight forwarder in Hawaii with terminals on all four major islands.

We handle all types of commodities and all sizes of freight for businesses and individuals. And with more than 300,000 square feet of space, our warehouses can accommodate all of your logistics needs.

Approved is a fourth-generation, family owned-and-operated company that is part of The DeWitt Companies family, an integrated network of five sister companies that provides relocation, logistics, warehousing and freight forwarding services to businesses, households and military clients all over the world. With wholly owned assets in Hawaii, Alaska, Guam and the Mainland, plus strategic partnerships in Puerto Rico, our clients trust us for easy, affordable, and safe transportation of their goods.

Working Smarter for You

At Approved, one of our core values is to Work Smarter for our customers in every facet of our business, whether it's transportation, warehousing, distribution,

sorting and segregating, transloading or project management.

We're proud that we recently celebrated six years without a lost time accident or injury. The average transportation and warehousing company anticipates nearly four incidents per year and we are proud to be blemish-free, all while handling millions of pounds of freight each week. By posting zeroes in the lost time column, we have saved our customers time, money and worry because a safe team equates to safe freight.

Top-tier brands rely on us for our flexibility, responsiveness, dependability and our dedication to efficiency and cost-effective operations to all points in the supply chain.

By Land, Air or Sea

Approved is an experienced, knowledgeable international 3PL offering:

- Transportation
- Warehousing
- Distribution
- Sorting & Segregating
- Transloading
- Project Management...

and much more.

Let Approved Freight Forwarders tackle your tough logistics challenges so you can focus on your core business. Contact us today.

Aptitive

312-725-8553 • info@aptitive.com • aptitive.com



Paul Corning
CEO

Mission Statement:

At Aptitive, we help transportation and logistics companies uncover the insights hidden in their data, from understanding historic trends to predicting future outcomes. Our consultants work with organizations to learn their business goals and develop an end-to-end modern data & analytics solution that gives companies the insights they need to grow and compete in a digital world.



Like many industries, the transportation and logistics industry is seeing the need for digital transformation to remain competitive in today's data-driven world.

Aptitive helps logistics companies implement data modernization strategies that improve access, accuracy, and visibility into their operations and supply chain. We create modern cloud-based data and analytics solutions for logistics companies to help them forecast customer demand, manage inventory, optimize routes, improve workforce management, and more.

Strategy

Data-driven organizations rely on modern data and analytics technologies to improve operations, attract new customers, increase profits, and much more. Before you can realize the value of a modern data solution, you need a well-defined enterprise data strategy.

Aptitive's consultants work with your team to understand your business goals and design a technical strategy to ensure success throughout the organization. From planning to technology selection to user adoption, our team will help you strategize a solution that drives data-driven insights for the long haul.

Modern Data Platforms

Our consultants build modern data solutions that not only integrate, standardize, and centralize your current data, but also lay the foundation for ongoing growth and expansion.

Advanced Analytics

Advanced analytics, when approached with a business goal in mind, has the capacity to improve sales and marketing efforts, streamline workflows, improve financial reporting and analysis, and optimize operations. Regardless of your reporting needs, Aptitive can build reports, dashboards, and custom applications that provide a user friendly way to access and visualize the data you need, when you need it.

IoT Solutions

The benefits of IoT can only be realized if your digital environment is ready for them. Aptitive's solutions team will help you plan for and build the environment to make your IoT initiatives a success.

Tech Agnostic Approach

Our tech agnostic approach and broad technical expertise means that we work with most of the leading data and analytics technologies today.

No matter where you are in your digital transformation journey, Aptitive will partner with your team to build data, analytics, and customer solutions that meet the challenges and goals of your organization.

aptitive
the power of innovative solutions

AR Traffic Consultants, Inc.

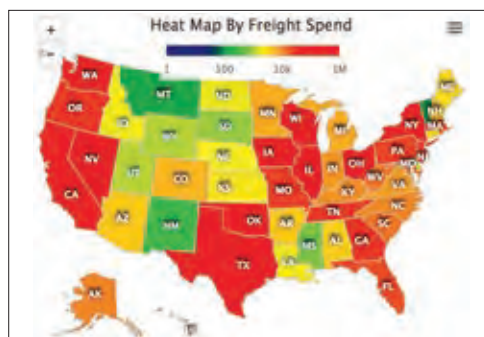
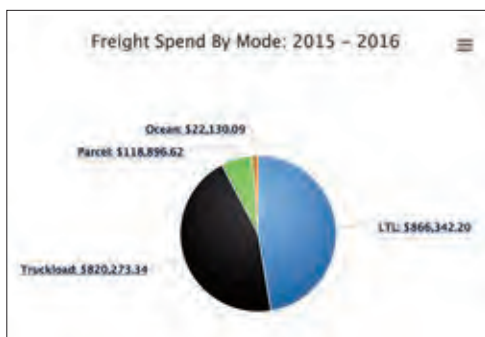
5 Hanover Square, Suite 202 • New York, NY 10004
212-736-8565 • artraffic.com



Arnold Riback
President

Mission Statement:

AR Traffic Consultants, Inc. has been dedicated to providing the finest in transportation logistics software and services since 1964. All of our products and services are designed specifically to improve the efficiency, accuracy, record-keeping, control and auditability of shipping. We provide the actionable information our clients need to lower their freight costs. Always providing top-level customer service, we are constantly upgrading our products and adding features to keep our clients ahead of the competition.



We offer a comprehensive transportation management system available both as a cloud solution and for IBM's System I (AS/400) computers. Our modules interface with many ERPs. We are also an Infor Solution Partner. Additionally, we provide third-party freight auditing and payment services as well as support freight rate negotiation for parcel, LTL and truckload shipments. Our cutting-edge Freight Dashboard will show you the components of your freight spend and help you determine areas for hidden savings.

You will have access to a system based on our sophisticated, proprietary rating engine CalcRate®, capable of handling multiple rate bases, FAKs, weight breaks, discounts, absolute minimums, fuel surcharge tables and accessorial charges. Discount and floor exceptions can be entered for region, state, even down to the ZIP code level. Use the system for carrier selection, rate comparisons, mileage determinations and to streamline your freight auditing and payment. All of your freight history is stored for future analysis and auditing.

Use CalcRoute®, our advanced freight optimization module, to combine shipments from one or multiple warehouses into

multi-stop truckload shipments, saving up to 40% of the cost of sending shipments separately. You can also use this tool for pool distribution and parcel zone skipping.

Use the freight analyzer to determine if your warehouses are shipping by the optimal carrier and if you are shipping from your best sourcing location. See the effect that changes in the rate base, floor and discount will have on your freight spend. The warehouse relocation tool will show you the cost impact of opening a new warehouse or moving an existing one to keep up with a changing customer base.

Take advantage of using your carriers' rate bases to save over using a corporate tariff when comparing rates with the LTL Bid Analyzer. See the effect on your freight spend as if you shipped by a single carrier, used the same carrier as historically or opted for the lowest-cost carrier. When you are ready, just set the new effective date and start shipping. Send truckload carriers your lanes with the Truckload Bid Analyzer, and compare and load the rates you accept with the press of a button.

Free studies are available to determine the impact of utilizing a TMS value-added program.



Arcosa

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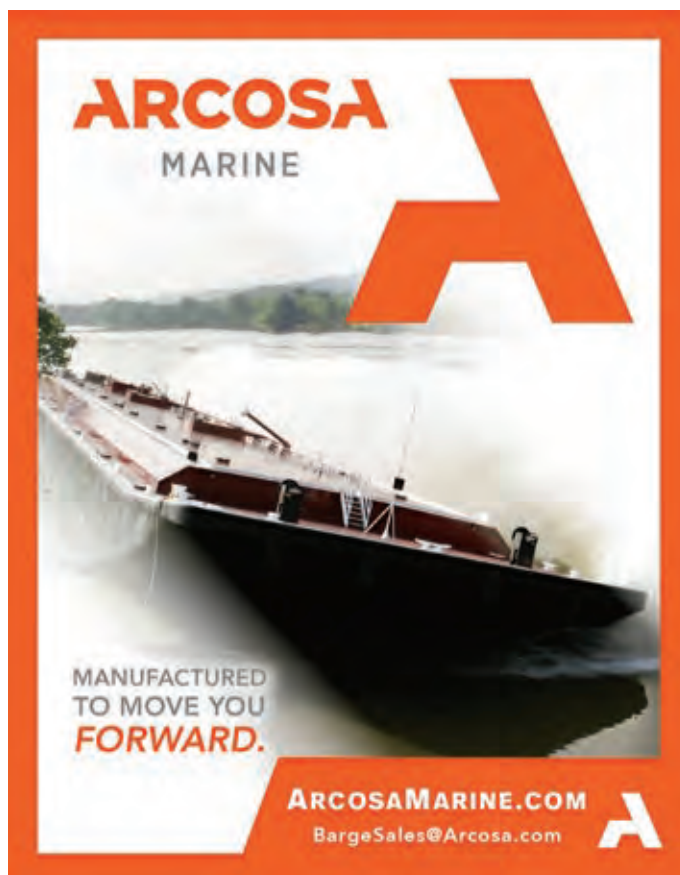


Arcosa is a provider of infrastructure-related products and solutions with leading brands serving construction, energy and transportation markets in North America. Our individual businesses have built reputations for quality, service, and operational excellence over decades. We report our financial results in three principal business segments: the Construction Products Group, the Energy Equipment Group, and the Transportation Products Group. Arcosa is headquartered in Dallas, Texas. Arcosa serves a broad spectrum of infrastructure-related markets and is strategically focused on driving organic and disciplined acquisition growth to capitalize on the fragmented nature of many of the industries in which we operate. With Arcosa's current platform of businesses and additional growth opportunities, we believe we are well-aligned with key market trends, such as the replacement and growth of aging transportation and energy infrastructure, the continued shift to renewable power generation, and the expansion of downstream energy infrastructure.

Arcosa's Inland Barge Group is comprised of Arcosa Marine Products, Inc., a leading manufacturer of barges used to transport cargo on U.S. inland waterways. Arcosa Marine Products manufactures dry cargo barges, including flat-deck and hopper barges, that are used to transport a variety of products including grain, coal, and containers. Arcosa Marine Products also manufactures tank barges that carry petroleum, fertilizer, ethanol, chemicals, and other liquid cargoes. It is the largest U.S. manufacturer of fiberglass hopper barge covers used primarily on grain barges. Under the brand name NABRICO® and WINTECH, Arcosa Marine Products provides a full line of deck hardware to the marine industry, including hatches, castings, and winches for towboats and dock facilities.

Arcosa Craftsmanship is at the core of what we do and contributes to our uniqueness as a company. The flexibility inherent in Arcosa Craftsmanship will help ensure our reputation for quality is carried forward into future generations. Our ability to provide superior products and services to our customers rests in the hearts and hands of the men and women who represent Arcosa Craftsmanship. We are grateful for their dedication and commitment.

When the time has arrived to invest in your next order of long-term assets, you can count and rely on your industry's leader, Arcosa Marine Products, Inc. We are proud to be shipbuilders for the inland and coastal waterway's business communities. Arcosa Marine Products, Inc. is committed to quality and superior customer service. Our manufacturing facilities are located on inland waterways



in the South and Midwest, enabling rapid delivery to our customers. We are always updating our equipment, training our workforce, and enhancing our production processes to ensure we continue to lead the industry.

Some of our newest developments include our COB-70-224—an innovative 70-foot wide Hopper Barge that holds 224 20-foot containers. And our ARC-TB-30K—a revolutionary Tank Barge with new and improved features, never seen before. Both are available for the first time in 2021.

ARCOSA
MARINE

Atlanta Bonded Warehouse Corporation

3000 Cobb Int'l Blvd. • Kennesaw, GA 30152 • General: 770-425-3000
Sales: 678-322-3120 • info@atlantabonded.com • atlantabonded.com

Mission Statement

Our mission is to provide integrated warehousing, transportation, and co-packaging services to the food, pharmaceutical, and related CPG industries. Our goal is total customer satisfaction through continuous innovation in best practices and in technology by focusing on teamwork, integrity, and accountability, all in a safe working environment.



Atlanta Bonded Warehouse Corporation (ABW) has provided public and contract food-grade, dry and temperature-controlled distribution services for over 60 years. In 2020, ABW handled 7.3 billion pounds of product through 6.4 million sq. ft. of capacity in 15 food grade warehouse facilities across the Southeast and Southwest. This equates to 8.2 million pallets.

With our in-house carrier, Colonial Cartage Corporation, and our co-packaging expertise, ABW can build integrated solutions for your asset-based logistics needs in the Southeast, Southwest, Midwest, and Great Plains.

Multi-Client / Public and Contract Warehousing

Since its 1948 inception, ABW has offered multi-client/public warehousing services to its customers. Our customers from small to large enjoy the benefits of our superior customer service, strategic locations, and extraordinary attention to detail.

ABW has extensive experience operating contract (dedicated) facilities where either ABW or the customer owns or leases the facility, using either our Tier 1 WMS or the customer's proprietary system to drive any array of services required for the business application. Our operations routinely score best-in-network across multiple Key Performance Metrics and we have received numerous awards for operational excellence.

Transportation Services

Colonial Cartage Corporation, our in-house carrier, is a full service carrier providing food-grade, dry and refrigerated TL, LTL, and pool distribution services for over 60 years. Colonial provides regularly scheduled temperature-controlled LTL delivery to all points in the Southeast, Midwest,

Southwest, and Great Plains, as well as truckload and plant support services throughout its service area. As an asset based provider, Colonial's Services include consolidated order selection (bulk picking) and inbound consolidation to outbound cross-dock.

Co-packaging / Re-packaging Services

ABW provides co-packaging and re-packaging services to many of our contract and public warehouse customers. We store and manage packaging and supplies for our customers and are able to recover a high percentage of goods damaged in transit or in need of packaging corrections.

With over two decades of secondary packaging experience, and now primary packaging experience, ABW continues to grow and develop its capabilities, co-packaging or building over 8.6 million units or cases in 2020. We have experience operating:

- High-capacity, high-speed baggers and cartoners
- Overwrap, shoe box, and box pack lines
- Flex lines for shelf ready displays as well as quarter, half, and full pallet displays

What does ABW offer that others do not?

- Stability of ownership: same family for over 50 years
- A focus on our core competencies of warehousing, transportation, and co-packaging: not being everything to everybody
- A track record proving we are not interested in second place
- Long term investments in our facilities, technology, and people
- Quick decisions: change is not patient and you need answers
- Flexibility in pricing and structure: we are interested in a fair deal for a long time



Atlantic Container Line

1-800-ACL-1235 • ACLcargo.com



Andrew J. Abbott
President & CEO

Cargo capacity for ACL's G4 vessels includes:

- 420-ton quarter ramp enables load and discharge of oversized cargo
- 28,900m² for high/heavy roll on/roll off cargo
- 1,300 vehicles
- 3,800 TEU cellular
- Unique container cell guide racking system

ACL Featured Services:

- Weekly RORO Service to and from 8 North American and European Ports
- Weekly Transatlantic Services to 15 Ports
- Unique North American ports directly serving Baltimore & Halifax
- 2 UK container port choices: Liverpool and London Gateway

Unique Capabilities:

- Dedicated weekly container & RORO service to Ireland
- Fast connections to Scotland
- Easy access to interior France and Germany
- Weekly container & RORO service to Sweden
- RORO connection to Helsinki & Petersburg

Follow us on:



ACL is the only Atlantic carrier that can transport both containers and oversized cargo on the same ship.

ACL's G4 (Generation 4) fleet, the *Atlantic Star*, *Atlantic Sun*, *Atlantic Sea*, *Atlantic Sail* and *Atlantic Sky* service the transatlantic trade and are the first of their kind vessels and the largest RORO/Containerships (CONRO) ever built. They incorporate an innovative design that increases capacity without significantly changing the dimensions of the vessel. The G4s are bigger, greener and more efficient than their predecessors. The container capacity is more than doubled at 3,800 TEUs, plus 28,900 square meters of RORO space and a car capacity of 1,300+ vehicles. The RORO ramps are wider and shallower and the RORO decks are higher (up to 7.4 meters) with fewer columns, enabling much easier loading and discharge of oversized cargo. Emissions per TEU are reduced by 65%.

The fleet continues to employ ACL's specially designed container cell-guides on deck. This unique feature allows the Company to extend its enviable 50-plus year record of ACL ships never losing a container over the side. All containers on deck are secured in a cell guide racking system always secure and locked in place despite the weather on the North Atlantic.

ACL's fleet of five G4 vessels dramatically improves the Company's competitiveness on the North Atlantic. The G4s demonstrate to our customers that our Parent Company, the Grimaldi Group, continues to do things differently than all of its competitors. We

employ unique ships, go to unique ports and carry cargo that others cannot carry.

Since 1967, ACL has been a specialized transatlantic carrier of containers, project and oversized cargo, heavy equipment and vehicles with the world's largest combination G4 RORO/Containerships. The Company's headquarters are in Westfield, New Jersey, with offices throughout Europe and North America. ACL offers four transatlantic sailings each week and offers oversized service from North America to the Middle East, Far East and Australia, as well as handles the Grimaldi Lines' service between the United States and West Africa and the Grimaldi EuroMed Service between North America and the Mediterranean. ACL is a subsidiary company of the Grimaldi Group of Naples, Italy.

ACL's one of a kind G4 fleet constantly enhances our cargo-carrying capabilities. Combined with Grimaldi's ever-expanding service network, the G4s enable ACL to provide even more services as a high-quality container and RORO operator for many years to come.



A Grimaldi Group Company

Bender Group

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salesinfo@benderwhs.com • bendergroup.com



Steve Reid
President

Bender Group combines a small business approach with innovative and technology-based logistics solutions to help companies of all sizes improve their supply chain systems, from the manufacturing source through delivery to multiple distribution channels.

We sincerely believe in...

- Keeping our Promises
- It Ought to Be Fun to Go to Work
- Listening
- Actively seeking responsibility
- Communicating in a straight line



Founded in 1945 by Edwin S. Bender in Reno, Nevada, Bender Group has 75 years of experience in Supply Chain expertise. For almost three quarters of a century, Bender Group has provided outstanding logistics services to customers of every size and kind.

Starting with 60,000 square feet of space, Bender Group has continued to expand to over a million square feet with operations in Nevada, Virginia, and California. Bender Group offers a variety of warehouse and distribution services, international customs brokerage and freight forwarding and a complete transportation network including domestic brokerage, less-than-truckload, truckload and small parcel services.

Distribution and Omni-channel Fulfillment

Bender Group's chief focus is providing flexible distribution and fulfillment center solutions along with any related value added activities at a competitive price. We have the physical operations, information systems, customer service and expertise to handle the most complex distribution requirements including omni-channel fulfillment. With bicoastal fulfillment facilities, Bender Group offers delivery service to 99.6% of the US population within 1-3 days delivery.

Transportation

Whether you need national or regional LTL service via our core carriers, airfreight, or small package carriers or are interested in private fleet conversion, Bender Group

can help you organize and streamline your transportation needs to give you the cost-effective, on-time delivery of goods to meet your business needs.

International

Bender Group offers the full complement of services required to manage the global supply chain, including customs brokerage and freight forwarding, import and export services, and value-added expert consultation services. Bender Group knows what is required to navigate the ever-changing world of trade and tariffs, while helping you make the strategic decisions necessary to compete on the world stage.

Information Technology

When CIOs are surveyed on what would improve their development or supply chain process, the overwhelming answer is increased visibility throughout their pipeline. Bender Group provides you with state-of-the-art systems, order processing, and communications systems to help you maintain clear visibility of your inventory and transactions from anywhere.

Why Bender Group?

Our company culture fosters proactivity, accountability, and execution. As a result, our logistics professionals have a deep sense of responsibility and empowerment to meet or exceed our clients' supply chain requirements. Bender Group has the agility to quickly implement intelligent ideas and technology, effectively addressing the ever-changing dynamics of a company's supply chain.

Brothers Freight Management

6924 Orr Rd • Charlotte, NC 28213 • 888-595-0154 • 980-270-5393
info@brothersfreightmanagement.com • quote@brothersfreightmanagement.com

Mission Statement

Brothers Freight Management is a highly driven team of experts committed to providing our customers with the highest quality of service in the trucking industry. We are dedicated to achieving maximum efficiency and productivity in every area of operation. We believe and stand by our motto, "Logistics Made Easy" and strive to bring that experience to every customer.



Brothers Freight Management is a full-service logistics provider. Established in 2015, starting with brokerage and expanding into the transport and fulfillment sectors. With over 30 years of experience in the industry, we offer a true one-stop shop type of service to our clients with key service locations across the country. Offering full-service storage and fulfillment in key cities across the nation including Los Angeles, Phoenix, Charleston, Jacksonville, Greensboro, Atlanta, and of course our base in Charlotte, NC. With the ability to provide multiple services under one roof along with being asset based, we diversify and stand out.

Logistics Made Easy

Our goal is to bring a full-service experience and the absolute best value to our customers. We strongly believe our current position in the market will allow us to serve our current and potential customers' needs with the greatest value possible completely serviced under one roof! As always, we believe in the "logistics made easy" experience, so **LET US WORK FOR YOU.**

Services

- Brokerage
- Trucking
- Fulfillment and Packaging
- Storage
- Expedited Rush Delivery
- Cross Docking
- Reloading/Drop Storage

Service Locations

- Fontana, CA
- Phoenix, AZ
- Atlanta, GA
- Charleston, SC
- Jacksonville, FL
- Charlotte, NC
- Greensboro, NC

Key Facts

- Asset based
- Continuous growth & financial strength
- Superior service
- Maintaining a modern fleet
- Motivated professional team
- Dependable
- Technology driven
- Time management



C.L. Services

4245 Intl. Pkwy, Suite 125 • Atlanta, GA 30354
800-533-3922 • 678-686-0933 (Atlanta) • clservicesinc.com

What We Stand For

In 1997, we set out to pave a new name in the transportation game. Our initial goal was to give shippers and carriers a freight brokerage service that uniquely combines the personal attention provided by a smaller brokerage with the technology and capacity of a large-scale freight management company. Today, C.L. Services continues to provide trusted transportation, while developing meaningful relationships with our carriers and customers along the way.



At C.L. Services, our experienced logistics team combines technology with dynamic industry knowledge to execute shipping solutions aimed to exceed your expectations. Our logistics professionals work diligently to ensure that your shipment arrives on time, keeping you updated every step of the way.

EXPERIENCE LOGISTICS AS IT SHOULD BE

C. L. Services opened its doors in 1997 with the goal of providing a world-class logistics service and an unmatched customer service experience, based upon our Proresponsive® Approach. Since then, C.L. Services has continuously developed innovative ways to deliver tailored shipping solutions that combine the personal attention of a small 3PL, with the versatility and capacity of a large-scale freight management organization. Today, C.L. Services continues to build on the foundation laid over twenty years ago, offering trusted freight services and innovative solutions, backed by the industry's most dynamic team.

ONE COMPANY TO MEET ALL YOUR NEEDS

Trusted by Fortune 500 companies and small businesses alike, C.L. Services' commitment to 24/7/365 customer service and reliability makes us a top choice in the industry. Our innovative training program keeps our employees updated on the latest technology and market trends, helping our team have knowledgeable and informed conversations to help save you time and

money. Our carrier compliance division continually monitors our carrier network to maintain our industry leading standards, allowing us to leverage our 45,000+ strong carrier network and maintain a 95% on-time standard.

C.L. Services is a full-service, asset-based 3PL, offering truckload, LTL, refrigerated and dry van, intermodal, cross-docking, container services, trailer pull and more specialized freight services. If you have freight to move, we have the equipment to move it on-time and in budget.

STRESS-FREE LOGISTICS

When you work with C.L. Services, you work with the future of logistics. We quickly evaluate and choose from the best rates, the best carriers, the best pick-up and delivery times, all in one place and on-demand. We book your load with the C.L. Services carrier match program. You will feel confident your freight is in reputable hands every time. We monitor your shipments from pick-up to delivery; we know where it is, shipment status, and when it will be there! We believe in transparent, Proresponsive® Logistics. Your job gets easier when you turn it over to the pros at C.L. Services.

- Full transparency with track and trace 24/7/365
- A select group of consistent people assigned to your account
- Live after-hours communication
- Freight optimization technology
- Expert consulting services
- Expedited & guaranteed shipments



Cass Information Systems, Inc.

13001 Hollenberg Drive • Bridgeton, MO 63044
314-506-5500 • cassinfo.com

Cass is the leading provider of freight audit, payment and business intelligence services, leveraging over 60 years of experience in providing solutions to major corporations having complex transportation payment and information needs.

By understanding our customers' critical transportation and accounting processes, we provide business intelligence solutions that help create a competitive advantage through reduced costs, increased efficiency, and better decision making capability.

In business since 1906 and processing freight invoices since 1956, Cass continues to offer stability, security, and expertise in the freight payment market.

Cass' goal is to not just duplicate existing systems but to provide enhancements to enterprise processing systems that will help to maximize a customer's supply chain efficiency. Cass' team of industry experts performs an in-depth analysis of your unique needs to provide the best solution and value.

The Value of Your Cass Relationship

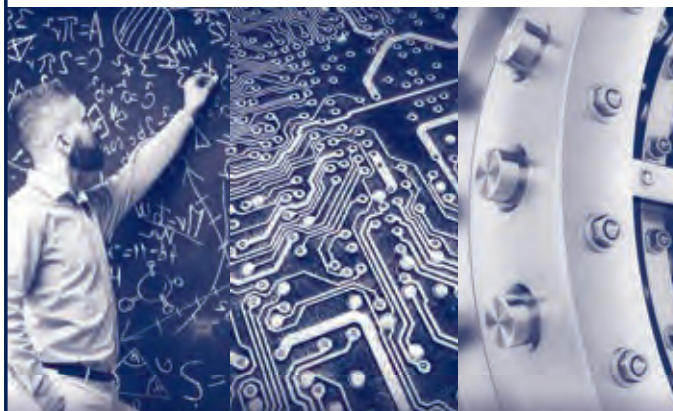
Cass provides a strategic partnership that delivers increasing value over time:

- Savings are achieved through invoice audits, process efficiency, and the use of business intelligence
- Supply chain finance programs improve working capital for shippers and carriers
- Best Practice Processes
 - Automation
 - Shipment rating and matchpay systems
 - Mode-specific auditors
 - Exception management
 - Trend analysis
 - Account/carrier management
 - Secure payments
- Business Intelligence
 - Systems integration
 - Custom business intelligence
 - Benchmarking
 - Accrual and general ledger data
 - Interactive data visualization dashboards
- Carrier services
 - Freight bill inquiry
 - Exception analysis

Efficiency and Visibility

Cass provides you with processing efficiencies that help reduce wasted time and resources. We also provide the latest technology and scalable solutions

The Power to Deliver: **Transportation Spend Solutions**



Solving Complex Needs

Providing Leading Edge Solutions

Ensuring Financial Security and Stability



...the leader in freight bill audit, payment and business intelligence services.

to grow with your needs. Our global business intelligence platform provides extensive visibility to actionable data for transportation spend management. And, we continue to develop new data services for our customers.

Experience and Service

We substantially invest in personnel and the required technology to ensure we provide superior customer support and service in our relationships. Our Customer Service Team includes an assigned Account Manager who manages the customer relationship with representatives from systems, operations and carrier relations. This level of customer support provides the highest echelon of quality services, and the most extensive customer oriented focus in our industry.

Contact Cass today to learn more about the freight audit, payment and business intelligence solutions that you can count on today and into the future.



CenterPoint

Corporate HQ: 1808 Swift Drive • Oak Brook, IL 60523
630-586-8000 • centerpoint.com



Bob Chapman
CEO

We're Built to Solve It

CenterPoint is an industrial real estate company made up of dedicated thinkers, innovators and leaders with the creativity and know-how to tackle the industry's toughest challenges.

And it's those kinds of problems—the delicate, the complex, the seemingly-impossible—that we relish most. Because with an agile team, substantial access to capital and industry-leading expertise, those are exactly the kinds of problems we're built to solve.



We have a track record of closing the most complex industrial real estate deals ever, so you can count on us to deliver forward-thinking solutions for your development, acquisition and management needs.

Leading Expertise

Our wide-ranging expertise enables us to complete complex industrial real estate projects reliably and quickly. Backed by more than three decades of experience, we are an innovator in the investment, development and management of industrial real estate and multimodal transportation infrastructure.

Because we believe that the most efficient approach to shipping and distribution requires thoughtful diversification across multiple modes of transportation, CenterPoint has multifaceted experience in the development and redevelopment of inland and intermodal ports. Combined with our relationships with railways and logistics providers and our expertise in site selection, we're exceptionally equipped to meet the growing demand for transportation and logistics solutions in key markets across the country.

CenterPoint's National Reach

CenterPoint is highly active in the investment, development and management of industrial real estate and multimodal transportation infrastructure in the United States. We have a growing national

platform that targets port and intermodal markets around the country. Whether you are looking to buy, sell, lease or build, our expert team is ready to tackle your supply chain challenges.

Local Market Experts

As a leader in logistics infrastructure and transportation-advantaged properties, CenterPoint has an active presence in strategically located ports and distribution hubs throughout the nation. In each of our markets, we can deliver on your industrial real estate requirements, including traditional build-to-suits, world-class intermodal centers, container storage facilities, state-of-the-art distribution centers, light manufacturing facilities, campus and park development, data centers and more.

We bring localized expertise, broker relationships and community connections to all our key markets. Through our focused industrial real estate activities spanning investment, development and asset management, we help our clients and our partners become more successful—maximizing the strategic value of their real estate assets and providing them with more efficient access and proximity to ports, rail terminals, major interstates and population centers.



CFI

customer.assistance@cfidrive.com
800-641-4747 • cfidrive.com



Greg Orr
EVP
TFI US Truckload

Vision:

Our core purpose is to create an environment where we inspire personal growth; promote service in our community; and provide opportunities for our CFI families.



TRUCKLOAD

Driving together since 1951, CFI is a progressive and stable partner, providing an industry-leading 97% on time service to our supply chain partners. Beginning with one truck and trailer, CFI grew to become one of the most respected names in trucking. A TFI International, Inc. company since 2017, CFI exceeds over the road expectations in the North American market. To better serve the full customer supply chain in Mexico and Canada CFI proudly offers CFI Mexico, CFI Logistics and CFI Temp-Control.

CFI's core values of safety, family, commitment and teamwork drive the organization's efforts to deliver the highest service possible. On and off the road, CFI family members demonstrate this culture by supporting charitable organizations and advocating for groups in need. The CFI True to the Troops, She Drives CFI and the inaugural first responder wrapped fleet promote the values of equality and respect within the industry. These tractors demonstrate our commitment to moving the industry forward.

CFI Mexico

Established in 1985, CFI Mexico delivers outstanding logistics and cross-border service to and from Mexico. Inbound cross-border goods from Mexico are seamlessly managed and

expedited for delivery into distribution centers, where they are staged for order fulfillment and final-mile delivery via an owned intra-Mexico LTL network. In addition, transloading, consolidation and deconsolidation are also popular services. Over 90,000 cross-border loads are handled per year with CFI Truckload.

CFI Logistics

CFI Logistics utilizes unique owned-asset capabilities through CFI Truckload and other TFI sister companies to provide supply chain solutions across North America. These close relationships and utilization of carriers recreate the outstanding service CFI provides. CFIL utilizes over 60% of CFI's owned carrier pool more than 80% of the time; double industry standards. From specialized and heavy haul, to project and field delivery our carriers are ready to meet the challenges that customers face.

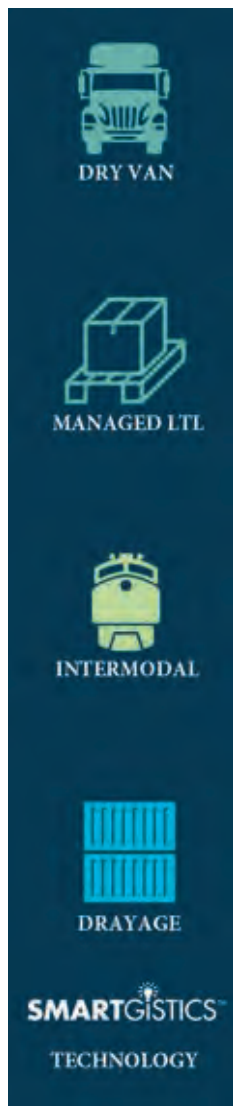
CFI Temp-Control

Not too hot and not too cold, established in 2021, CFI Temperature Control is the official carrier of CFI freight requiring controlled temperature environments due to varying factors. With the enterprise of CFI behind them, CFI Temperature Control provides a professional, dependable and safe experience for customer freight from pickup to delivery.



Corporate Traffic Logistics

6500 Bowden Road, Suite 202 • Jacksonville, FL 32216
800-787-2334 • Fax: 904-727-6804 • cti@corporatetraffic.com • corporatetraffic.com



Corporate Traffic Logistics began in the imaginations of three brothers who dreamed of achieving success in the same industry as their father, who ran a trucking company. Chris, Chad, and Craig Cline went on to start Corporate Traffic in 1992 with the goal of creating a worldwide logistics company their father would be proud of. Today, the dream is real—we're still family owned and operated, and we deliver the goods, even when others can't.

We have pioneered a dual-service approach allowing our trucks and logistics services to work in tandem. And we deliver your goods on time, intact and on budget.

Known internationally for a comprehensive range of capabilities, Corporate Traffic has built a reputation for offering a higher level of service, owning the entire logistics process from start to finish.

Our accomplished professionals work with cutting-edge technology to make doing business with Corporate Traffic easy, rewarding and remarkably affordable. We work hard to build strong relationships with our clients, and constantly seek better ways to meet their needs and exceed expectations, whether by full truckload, less-than-truckload, intermodal services or dynamic technology.



COSCO SHIPPING Lines (North America) Inc.

100 Lighting Way • Secaucus, NJ 07094
866-830-2550 • elines.coscoshipping.com/usa



COSCO SHIPPING brings the highest quality of ocean cargo transportation services to every corner of the globe, with one of the largest and greenest fleets making frequent and timely calls to the busiest ports worldwide. COSCO SHIPPING delivers your containerized cargo quickly, economically and securely, interfacing with rail, road, barge, air and more, with advanced equipment and technology leading the way to absolute supply chain efficiency. And, there is no other ocean carrier who knows China better.

Your China Partner

With long and detailed experience in moving cargo in and out of the interior of China, COSCO SHIPPING is your guide to selecting the right feeder services, barge, railroad and trucking companies. With local offices and representatives positioned strategically in all of the manufacturing and production cities across China and Asia, COSCO SHIPPING can save you time, money and paperwork in getting your shipments prepared and on to port locations. COSCO SHIPPING truly is your China partner, with accurate and comprehensive advice available to you by phone, fax, web and other sources on a real-time, around-the-clock basis. No matter if you are just beginning to trade with China or are an old China hand, COSCO SHIPPING can add value to your supply chain.

E-Lines is E-Sweet, Includes the Customer Portal

COSCO SHIPPING provides you with the tools to make the shipping process

seamless, easy and efficient. Our E-Lines web service helps you check routes and rates, collect details and documentation, share data, generate bills of lading, track and/or redirect inbound and outbound shipments, and maintain accurate metrics and reporting. Our E-Lines e-suite saves you time, effort and aggravation, and is backed by a global network of ocean cargo specialists ready 24/7 to assist in any part of the process. See it and try it through the COSCO SHIPPING Customer Portal at support.cosco-usa.com

The Ocean Alliance

COSCO SHIPPING is part of the Ocean Alliance, the largest operational agreement ever made between shipping companies. With more than 40 maritime services, we will be sharing our fleet with the largest Asian shipping companies. By offering more ports and more direct calls, as well as better transit times, we will provide our customers with unmatched quality services. This offering is a cornerstone of our strategy as it reinforces our competitiveness and strengthens our position as a key player in the shipping industry.

We Deliver Value

COSCO SHIPPING doesn't just move ocean cargo, we make moving ocean cargo a better part of your bottom line. 50 main-line services, 85 offices in 160 countries serving 1,000 ports around the globe all add up to a world-class ocean carrier with worldwide capabilities.

Contact COSCO SHIPPING today!



CT Logistics

12487 Plaza Drive • Cleveland, OH 44130-1084
216-267-2000 • sales@ctlogistics.com • ctlogistics.com



Allan J. Miner
President

The associates of CT Logistics are committed to providing superior supply chain business services and software solutions.

Our leadership has been earned with over 98 years of client confidence and trust.

ISO 9001:2015
SOC II



CONFIDENCE

CT provides more than 98 years of experience with comprehensive, broad supply chain accounting and business intelligence solutions tailored to meet your company's unique needs. We give you the confidence to trust CT, a premier provider in freight bill audit and payment, along with transportation management services. It is our desire to assist you in managing your transportation spend and data so you can focus on what matters most, which is efficiently and effectively running your supply chain management programs.

TRUST

Small firms to Fortune 100 corporations across the country, and around the globe, have trusted CT to assist them in making solid informed decisions regarding their freight bill audit and payment challenges. Our team of professionals has been instrumental in assisting our clients by utilizing our expertise and technology to maximize their ROI and provide the flexibility they need to compete in an ever-changing, global marketplace.

LEADERSHIP

CT is a leader in the freight bill audit, payment and transportation management services industry. CT's portfolio of software solutions includes: our TMS software, CTLionSM, our customized freight audit & payment system, AuditPaySM; our rating

and routing program, FreightRaterSM, and our exclusive Managed Transportation program, TranSaverSM. We take paths least explored to find solutions that will keep your company abreast of shifting business environments and opportunities to remain ahead of your competition.

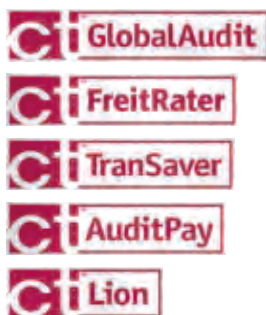
CONFIDENCE. TRUST. LEADERSHIP. TRADITIONS SINCE 1923

They've become part of an important 98 year tradition that our clients have come to rely on when partnering with us. But just as important is the future the CT team will help you build. Our services and software are constantly evolving to provide you with the latest leading-edge tools and technology with user-friendly applications that will help manage and reduce logistics costs while adding value and more to your bottom line.

Visit www.ctlogistics.com for more information about our firm. Or call (216) 267-2000 Ext. 2190 to speak with one of CT Logistics' knowledgeable representatives regarding your company's freight transportation, logistics or global supply chain challenges.



Confidence, Trust, Leadership, Traditions since 1923.



CTSI-Global

1 South Prescott • Memphis, TN 38111
888-836-5135 • solutions@ctsi-global.com • ctsi-global.com



J. Kenneth Hazen
CEO

Total Logistics Technology + Intelligence

Founded in 1957, CTSI-Global solves supply chain challenges by transforming logistics data into actionable insights.

Services

- Logistics Management
- Honeybee TMS
- Spend Management
- Strategic Data

Locations

- Memphis
- Atlanta
- Austin
- India
- Ireland
- Singapore

In a world of complex supply chain data, go Global.



Your Global Logistics Ecosystem

CTSI-Global is the **largest private freight audit tech provider in the world**, processing \$15 billion in transactions every year. Versatile logistics management, robust Honeybee TMS, legendary spend management, and analytical Strategic Data create end-to-end supply chain solutions that fit your business. Our tech solutions automate processes, improve performance, and decrease transportation costs for national, regional, and global shippers.

We personalize our logistics ecosystem to the needs of your company and industry. We support clients from all industries, from life sciences to electronics, aerospace to automotive, and retail to 3PL. Our dedicated business analysts provide tactical support and all-inclusive business reviews.

Logistics Management

- Experts optimize your logistics strategy while providing full visibility, navigating the intricacies of your supply chain.

Honeybee TMS

- Comprehensive TMS to plan and execute shipments: Manage orders, optimize loads, select carriers, tender shipments, manifest parcels, track shipments, and manage claims.

Spend Management

- Eliminate payment errors, save time and money, and offload contract management with the most advanced global freight audit and payment.

Strategic Data

- Business intelligence dashboards and benchmarking tools empower you to visualize, synthesize, and analyze trends in your shipping data, centralized.

Your business depends on timely, accurate, and complete visibility to execute shipping and manage transportation spend. Invest in CTSI-Global to reduce your costs and stay competitive in the global marketplace.



DAT

8405 SW Nimbus • Portland, OR 97008
800-551-8847 • dat.com



Claude Pumilia
President & CEO

DAT Freight & Analytics

has provided the most accurate insights into truckload markets since 1978. With the deepest and broadest data in the industry and the largest on-demand freight marketplace in North America, DAT is the source for market trends and data insights for shippers, brokers, carriers, media and industry analysts alike.

“At DAT, we exist to remove the uncertainty from freight with cutting-edge technology, data analysis and unrivaled intelligence. We’ve seen unprecedented pressure on the industry and are dedicated to meeting the needs of our customers during this difficult period. We aim to be a partner to the industry, and have our data provide a level of certainty during these otherwise volatile times.”

- Claude Pumilia,
President & CEO



Analytics from the Freight Market Intelligence Consortium, acquired by DAT from Chainalytics in 2020, provide an unrivaled 360-view of the freight marketplace, with global transportation intelligence.

DAT provides the most valuable data in transportation. With a database of more than \$118 billion in annual freight invoices and 183 million freight matches, DAT produces real-time analysis and freight forecasting that’s twice as accurate as any other model.

Our platform **DAT One** connects motor carriers, freight brokers, 3PLs and shippers on the largest on-demand freight network.

Our analysis through **DAT iQ** elevates data into actionable insights. With DAT iQ you get:

- Freight Market Intelligence Consortium
- Deep visibility into contract freight

The Freight Market Intelligence Consortium (FMIC) is a subscription-based benchmarking and market intelligence platform, with consortium members anonymously sharing their shipping data. DAT iQ uses advanced analytics and machine learning to develop all-in cost estimates, which explain the factors that really matter. The platform provides leading-edge benchmarking capabilities that both measure and maximize procurement strategies and help save transportation costs.

Freight Rates

The industry standard in truckload pricing

DAT provides the going rate on every trucking lane for every equipment type,

with access to the most historically complete database of truckload rates that exists. The data allows customers to make the most informed business decisions, including, confidently bidding on RFPs, making quick pricing decisions and accurately forecasting where prices will be in the future.

Data Analytics Services

Custom reports specific to your business

DAT produces custom reports that are specific to business needs, plus the underlying data to get a deeper understanding of the markets. We offer supply and demand data, historical rates, and the most accurate pricing forecasts available, all customized and tailored to your specifications. Not sure what data you need? Tell us the problem you’re trying to solve, and we’ll help.

DAT Trendlines

Free report on national trends

DAT Trendlines is a weekly newsletter that provides high-level insights on pricing along with breakdowns of current supply and demand trends. Frequently cited by *The Wall Street Journal*, *Financial Times* and *Business Insider* as an indicator for the trucking economy.



DCG Fulfillment

1060 N. Wineville Ave. • Ontario, CA 91764
909-204-3200 • sales@dcgfulfillment.com • dcgfulfillment.com



Jim Jennison
President & CEO

PHILOSOPHY

Doing business can be challenging. At DCG, we feel strongly that it is much easier to “roll-up our sleeves” and attack challenges head-on until they are brought to an accurate and timely close, versus spending time and effort after the fact, explaining why we were not able to meet even the toughest of demands.

As a company we have created an atmosphere among our employees which encourages them to work as one team and to approach the warehousing and distribution functions differently than is typically found with our competitors. A major emphasis is to conduct our business at the highest professional levels yet maintain an easy business style that enables our customers to communicate easily with us. This promotes strong partnerships with our customers.

At the end of the day, we pride ourselves in performing at levels that exceed our customers' highest expectations.

Since DCG Fulfillment was founded in 2000, the family-owned West Coast third-party logistics provider has enjoyed significant year-over-year growth. The entire increase can be attributed to people hearing about the outstanding service levels we provide.

To date we have not employed a formal sales effort—our business has come primarily by way of referrals from our current customers. They say some extremely nice things about the positive effects that DCG Fulfillment has had on their businesses—their word-of-mouth is working!

Ensuring the Highest Performance Levels

Relative to our growth, we are very careful not to take on any more business than we can comfortably on-board and digest. As operations management professionals, we recognize the need to work diligently to bring each new account to its highest performance levels quickly—just as if they had been with us for years.

Our goal is to be a “partner” by handling all the operational needs in an exemplary manner. By doing so, we expect that our customers will have more time to devote to other areas of their businesses, such as sourcing products or the managing of the marketing, merchandising, and selling efforts. DCG handles the rest.

E-commerce Innovation

Our classic approach to servicing your business has not prevented us from investing in top-tier systems and cutting-edge operations. Being one of the top pick-and-pack operations on the West Coast has allowed us to expand, but looking towards the future we understand the importance of e-commerce in supply chain to sustain your, and our, growth.

We have invested in e-commerce specific processes, which expedite your products out the door in a professional fashion and provide a better end-user experience to your customers. We also have invested in robotics to help ensure consistency and quicker turn-around times.

We hope that you will take the time to find out firsthand about our company. Our professional approach, yet casual style,



not only provides effective results but it also makes doing business with us easy and, hopefully, an enjoyable experience. At DCG Fulfillment, we are sure you will be impressed.

If you are looking for a trust-worthy 3PL that provides excellent service, treats your company's interest as if they were our own, and a logistics partner, please email us at sales@dcgfulfillment.com.

Our Facilities

Currently we operate out of six warehouses in Southern California which comprise more than 2.7 million square feet. These buildings are Class A structures with ceiling clear heights from 30 to 36 feet. Each warehouse has an extensive fire sprinkler system in place with 24-hour monitoring from a central station. In addition, the systems are tied directly to the fire departments. In each building we also have 24/7 monitored security systems in place.

In addition, we are poised to quickly add additional warehouse space as needed. We have designed all our computer systems to be easily replicated and we are constantly grooming personnel at all levels. This core of talent is ready to immediately staff a new building. If we were fortunate to gain your business our plan would be to immediately acquire the additional space if required.

DCG Fulfillment

DDC FPO

US: +1 303 674 0681 • UK & Europe: +44 800 011 2450
info@ddcfpo.com • ddcfpo.com



Jan Trevalyan
CEO

As a strategic partner for the transportation and logistics industries, DDC FPO's mission is to deliver business process solutions that empower clients to focus on core competencies and achieve their goals.



DDC Freight Process Outsourcing, or "DDC FPO," serves as a strategic business process outsourcing (BPO) partner for today's leading transportation and logistics providers, including 50% of the top less-than-truckload (LTL) carriers as ranked by revenue.

Recently named as one of the Fastest Growing Companies in America by Inc. Magazine, DDC FPO processes approximately 300,000 shipments per day between 33 countries, and is responsible for one-third of North America's LTL billing.

DDC FPO's Solutions Include:

- Freight Billing, including AI-powered DDC Intelligence
- IT Outsourcing
- Customs Brokerage Processing
- Freight Rate Auditing
- Customer Lifecycle
- And more

DDC's data-based, goal-driven front and back office solutions deliver 40-60% cost savings on average, reliable business continuity, labor elasticity, technology interoperability, rapid processing speed, record-high accuracy, and long-term cost containment.

As the freight-focused member company of The DDC Group—a worldwide network of BPO companies established in 1989—DDC FPO is able to serve clients in over 30 languages across North America, UK, Europe, and Asia-Pacific.

More About The DDC Group

With over 30 years of proven business process excellence, The DDC Group has guided clients through globalization, market fluctuations and technological determinism.

Our wide array of resources, innovative technologies, proprietary workflows, subject matter expertise, and deep connections with key influencers in strategic regions and sectors allow us to deliver services in a uniquely flexible and reliable framework that maintains both unyielding business continuity and service level agreements despite market volatility.

Across all of our member companies, DDC's 5,000 industry-trained subject matter experts apply their decades of experience to achieve compelling results for each of our clients worldwide.



Descartes Systems Group

International: 519-746-8110 x 202331 • North America: 800-419-8495 x 202331
info@descartes.com • descartes.com



Edward J. Ryan
Chief Executive Officer

Mission Statement

By combining innovative technology, powerful trade intelligence and the reach of our network, Descartes delivers the industry's most complete offering of cloud-based logistics and supply chain management solutions.

Proven Expertise

With thousands of customers worldwide, Descartes has a proven track record of helping companies drive logistics value by automating processes, enhancing service, improving profitability and ensuring compliance. Descartes' headquarters are in Waterloo, Ontario, Canada and the company has offices and partners around the world.

Transportation Management

- Shipper TMS
- Real-time Visibility
- Capacity Sourcing
- Retail Distribution
- Parcel Shipping
- Freight Broker TMS
- Dock Scheduling and Yard Management
- Data Analytics for Transportation Management

Routing, Mobile and Telematics

- Route Planning and Optimization
- Dispatching and Tracking
- Mobile Apps
- Telematics and Compliance
- Appointment Scheduling
- Fleet and Driver Performance Management
- Data Analytics for Routing, Mobile & Telematics

B2B Connectivity and Messaging

- Logistics Messaging
 - Air
 - Ocean
 - Road
 - Express and Postal
- Commercial/B2B Messaging
 - B2B
 - Order-to-Cash
 - Procure-to-Pay
 - Supplier Compliance
 - EDI-Managed Services
- Customs Messaging
 - Customs Authority Connectivity
 - Broker Connectivity

Customs and Regulatory Compliance

- Security Filings
 - North America
 - EMEA
 - LatAm
 - APAC
 - ROW
- Customs Declarations
 - Canada
 - United States
 - Europe
- Product Classification and Duty Determination



- Denied Party Screening
- Export Compliance
- Other Government/Industry Programs
 - Partner/Other Government Agencies
 - Industry Program Support (CSA, C-TPAT, EU Green Lanes)
 - Ocean Regulatory Services

Broker and Forwarder Enterprise Systems

- Shipment Management
- Customs Compliance
- Accounting and Billing
- Warehousing and PO Management
- Customer Portal
- Classification
- Denied Party Screening
- LSP Lead Generation
- Value-added Services

Global Trade Intelligence

- Product Classification and Duty Determination
- Denied Party Screening
 - Screening and Sanctions Compliance
 - Audit and Resolution
 - Sanctioned Party Content
- Export Compliance
 - Export Classification
 - Controlled Technology
 - Export Automation
- Duty and Tariff Data
- Import & Export Data
- Trade Research

Ecommerce Shipping & Fulfillment

- Ecommerce Connectivity
- Warehouse Management
- Shipping
- Home Delivery



DF Young

1235 Westlakes Drive, Suite 305 • Berwyn, PA 19312
Phone: 610-725-4000 • Fax: 610-725-0570 • dfyoung.com



A. Wesley Wyatt
President and CEO

Mission Statement:

DF Young's mission is to always look at our clients' world through fresh eyes. With a strong commitment to our own staff that inspires creative solutions to international logistics, we set the stage for superior customer service that removes obstacles, builds trust and makes our customers' world more manageable.

DF Young Services

- Air Services
- Ocean Services
- Ground Transportation
- Customs Brokerage
- Security Management
- Documentation
- E-Business

Contact:

Steve Giampapa
Vice President of
Operations
610-725-4000
steve.giampapa@dfyoung.com

DF Young brings over 100 years of experience and creative thinking to integrated logistics services and complete supply chain management. Our specialized business units:

Automotive

For 85 years we've served automotive manufacturers in NA, SA, Europe, Japan and Australia, and work closely with the largest Ro/Ro carriers. Full Electronic Interface capabilities and ISO Registration. Services are geared to:

- Prototype and exhibition vehicle shipments
- Fully and semi-knocked-down shipments
- Built-up vehicle shipments

Commercial Goods

Full front- and back-end services support multi-national manufacturers, international distributors, retailers and wholesalers. Includes Ocean/Air Import and Export and Import Customs Brokerage.

Front-End Services:

- Import/Export flow and distribution
- Quality Assurance program

Back-End Services:

- Vendor direct inventory
- Reverse logistics
- Store setup and fixtures

Supply Chain Services:

- Sole-source provider
- Just-in-time pick/deliver
- Real-time tracking
- Simplified, competitive pricing
- Consultation services
- Full logistics services
- Total Quality Assurance
- Performance metrics/reports

Food/Humanitarian Aid

As one of the world's oldest companies providing this vital global service, we work closely with international relief and U.S. Government agencies. We provide computer recordkeeping, documentation and complete logistics solutions.

Foreign Military Service

As a key logistics and shipping resource for Foreign Military Sales (FMS) since the inception of the U.S. Government Security Assistance Program, we provide full service support to participating foreign countries for all material handling and shipping.

Services include:

- Air and ocean freight shipping and/or charters
- Export licensing, documentation and packing
- Explosives call forward
- HazMat processing
- Inland freight services
- Repair/return processing
- Materials tracking/tracing

Petrochemical

DF Young handles the distribution of oil well supplies and project cargoes that are purchased and shipped to major petrochemical manufacturers worldwide.

Services include:

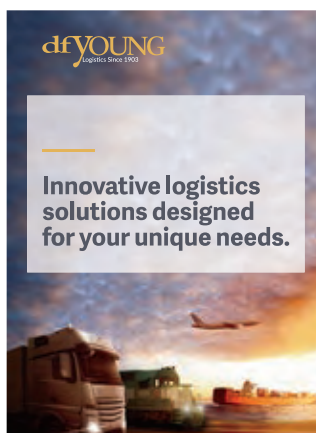
- Charters
- Contract management
- Purchase order fulfillment
- Documentation
- Online reporting
- General and project cargo
- Hazardous materials
- Air, ocean, land and rail transportation

Pharmaceutical Sample Distribution

DF Young maintains a Dedicated Pharmaceutical Division with highly trained operations and customer service teams specializing in the pharmaceutical industry. They provide a significant cold chain and launch experience.

Services include:

- PDMA compliance
- Pharma-specific packaging, labeling and transportation
- Convenient, time-specific delivery windows
- Field inventory transfers
- Agent service center providing real-time status updates
- Customized reporting for all service and financial requirements
- Cold chain warehousing and storage



Distribution Technology

1701 Continental Blvd. • Charlotte, NC 28273 • Phone: 704-587-5587 • Fax: 704-587-5591
rcantelmo@distributiontechnology.com • DistributionTechnology.com



(Left to right): Tom Miralia, President & CEO; Rock Miralia, Principal Founder & Chairman of the Board; Mark Miralia, Vice President



We pride ourselves in offering each customer a unique, unparalleled client experience that sets the industry standard in reliability, accuracy, and dependability. Our goal is to develop robust, long-term relationships with each customer to improve and enhance their business processes—ensuring success and exceeding expectations every single day.



For over 50 years, Distribution Technology has helped businesses distribute their products globally with exceptional care, accuracy, and efficiency.

Today, a team of 250 dedicated staff utilizes modern technology and processes to help customers control distribution costs, increase speed to market, and make multi-channel shopping experiences more convenient and streamlined for the end user.

With capabilities to store and efficiently deliver retail goods, raw materials, food products, e-commerce, and more in our 1.2 million square ft. collection of distribution centers, we excel in exceptional third-party logistics, warehousing, and transportation across a variety of industries, supporting both B2B and B2C operations.

Channels We Serve

- Mass Retail
- Fast Moving Consumer Goods
- Industrial Materials and Products
- General Merchandise
- Building Materials
- Paper Products
- Specialty Chemicals
- Specialty Grocery, Beverage, Confections

End-to-End Solutions

Warehousing. Our facilities are equipped with temperature-controlled, food-grade, secure storage capacity—including additional storage for chemicals and a designated area for hazardous or flammable materials.

Transportation Management. We take the frustration and hassle out of transportation, and by using our expertise in freight consolidation, we leverage multi-client volumes to collectively save money—improving efficiency, reducing transportation expense, and creating value that benefits our entire customer base.

Manufacturing Support. We work with manufacturing clients synchronizing the flow of raw materials and work-in-progress to support just-in-time production, along with managing finished goods storage with flexible warehousing at less overhead and capital expense. This ensures you meet your promises to your customers.

Imports. With decades of experience handling imports and exports of products and raw materials, we have the ability to streamline hundreds of container floor loads weekly, allowing you to optimize your own capacity as needed.

Direct Rail Access. Our facilities are strategically located with rail-served direct access to the Norfolk Southern Railroad, giving you the advantage of seamless transloading through our DC from truck to boxcar, boxcar to truck, or to container.



Distribution
TECHNOLOGY

DSC Logistics, now CJ Logistics America

1750 S Wolf Road • Des Plaines, IL 60018
dsclogistics.com • info@dsclogistics.com



Ed Bowersox
CEO
CJ Logistics America



Sung Yup Suh
Deputy CEO
CJ Logistics America

At DSC Logistics, we combine innovative solutions, collaborative partnerships and high-performance operations to unlock the potential of your supply chain. We've joined with CJ Logistics, The Global SCM Innovator, creating an integrated global network with expanded capabilities.

Integrated Global Solutions

End-to-end visibility across a global network fuels innovation and optimization potential. Our continuous improvement methodology is focused on customer value creation. We apply a Lean framework to eliminate waste holistically across the supply chain.

TES (Technology, Engineering, Systems & Solutions)

Designing both for today and the supply chain of the future, our solutions feature network simulation, artificial intelligence (AI), automation, big data, internet of things (IoT), advanced material handling equipment, autonomous vehicles, conveyor systems and robotics.

Transportation Solutions

Our expertise and tools help customers explore scenarios, predict events, identify opportunities and optimize networks. Freight forwarding, asset-based and cross border transportation services can be integrated with our managed transportation and warehousing services.

Logistics Center Management

Known for our large-scale, long-term and high-performing warehouse operations, we provide customized logistics centers with a wide range of size and complexity, and have expertise in highly regulated industries and environments.

Supply Chain Packaging Services

Our solutions include in-network co-packing, production lines, repacking, returns and specialized packaging. We help customers preserve resources and protect product by performing packaging services within their own warehouses and networks.

Supply Chain Consulting

We provide a variety of consulting services with expertise in supply chain analytics, network modeling, engineering, technology and operations. Our experience serving leading global companies across a variety of industries enables the insightful advancement of leading practices. Our practitioner advantage ensures feasible, actionable solutions that we stand behind.

Stay tuned for our brand and website launch coming soon! Learn more about our strategic solutions and how they can strengthen your supply chain:

dsclogistics.com



DSC Logistics, now CJ Logistics America

We provide dynamic supply chain leadership for customers based on collaborative partnerships, innovative solutions and high-performance operations.



The Global SCM Innovator

We have joined with CJ Logistics, accelerating our transformation strategy to deliver customer value in new and expanded ways.

Our Solutions

- Integrated Supply Chain Solutions
- Transportation Management
- Supply Chain Packaging Services
- Information Technology
- International Freight Forwarding
- Business Process Integration
- Supply Chain Consulting
- Omnichannel
- Industry Insights
- TES (Technology, Engineering, Systems & Solutions)
- Logistics Center Management
- Business Intelligence
- Retail Consolidation + Requirements
- Global Supply Chain Network
- Cross-Border Transportation
- Asset-Based Transportation

Echo Global Logistics

600 West Chicago Ave., Suite 725 • Chicago, IL 60654
800-354-7993 • info@echo.com • echo.com



Doug Waggoner
Chairman & CEO

Transportation Simplified

Services Offered:

- Managed Transportation
- Truckload
- Partial Truckload
- LTL
- Intermodal
- Expedited
- Small Parcel
- International Air & Ocean



Echo Global Logistics (NASDAQ: ECHO) is a leading provider of technology-enabled transportation and supply chain management services. Echo began in 2005 with one objective—to simplify transportation management. From coast to coast, dock to dock, and across all major modes, we connect businesses that need to ship their products with carriers who transport goods quickly, securely, and cost-effectively. Echo simplifies the logistics process so our clients can focus on what they do best.

Relationships

Echo has built solid partnerships with over 50,000 carriers, creating a robust network that matches the needs of our shippers with the needs of our carriers. Our capacity and geographic coverage allow us to move 16,000 shipments every single day for our 35,000 clients.

Technology

The core of Echo's offering is our proprietary technology, which is quickly adaptable, highly scalable, and uniquely easy to use for clients, partners, and vendors. Through efficiently integrated portals, we ensure better data collection and transmission, seamless communication, comprehensive reporting, and real-time visibility. EchoShip is our innovative, self-service web portal that consolidates and simplifies shipping by

enabling customers to quote, book, ship, manage invoices, and track shipments in real time. With its simple, user-friendly interface, EchoShip eliminates repetitive workflows and speeds up shipping with an efficient, four-step process, giving clients time back to focus on their business. EchoDrive®, our web portal and mobile app for carriers, gives users real-time access to search, bid, book, manage, track, and get paid on freight hauled for Echo. The platform's load management tool and document upload capabilities streamline operations, keep dispatchers organized, and help drivers get back on the road faster.

Service

Above all, Echo values exceptional service in every client interaction. Our commitment to excellence and innovation, delivered by the industry's most talented transportation professionals, means we recognize that one solution does not fit all. Echo evaluates each client's transportation needs, discovers efficiencies, and delivers simplified transportation management—all with a relentless focus on execution.



ElectriCities of North Carolina, Inc.

1427 Meadow Wood Blvd. • Raleigh, NC 27604 • www.electricities.com



Brenda C. Daniels
*Manager, Economic
Development*

"It's no coincidence that some of the state's most dynamic growth has occurred in our public power communities. Advanced manufacturing, food processing, metal-working, plastics—any power-intensive industry is going to find significant advantages here."



ElectriCities is a not-for-profit government service organization representing more than 70 public power communities throughout N.C., S.C., and Va. These cities, towns, and universities operate their own electric distribution systems, illuminating the homes and workplaces of more than 1.2 million customers.

One of ElectriCities' roles is to represent member communities to expanding and relocating companies. We maintain comprehensive databases for all public power municipalities in North Carolina. Prospects can order detailed reports on dozens of sites, from mountains to coast. Within 48 hours of a request, ElectriCities will send profiles of locations that precisely match the company's specifications. "They find all the information they need in one place," says Brenda Daniels, the organization's economic development manager.

ElectriCities has further simplified economic development in N.C. by creating the Smart Sites® or S2 program. "Smart Sites is our shovel-ready site qualification program," Daniels explains. "We go through a very rigorous engineering review on a piece of property before certifying it as a 'Smart Site.' Smart Sites are shovel ready for potential new tenants, which saves the company a lot of time and money."

Thanks to a partnership with the state, an ElectriCities S2 certification rolls into North Carolina's similar shovel-ready program. Each Smart Site has municipal electric

service, water, and sewer access within 500 feet, and is within five miles of an Interstate or Interstate-quality highway. Faster construction, fewer uncertainties, and less risk for companies and site selectors alike. With 18 certified Smart Sites and more in process, Daniels says the team has high hopes for the program's future.

In addition, ElectriCities offers a certified industrial park dubbed a "Prime Power Park," which offers 12 MW of on-site backup power generation. Located in the city of Albemarle, the park has direct rail access from Charlotte/Douglas International Airport, qualifying it as a great rail intermodal site. "If a company has a critical operation that can't risk a power outage, they have a backup available, without spending money to purchase a generator," Daniels adds.

The Smart Sites and Prime Power Park, like the rate-lowering services to all ElectriCities' customers, provide ongoing incentives for companies looking for an ideal logistics location.

ElectriCities remains a partner through the entire site-selection process, helping companies with utility-related issues, arranging site visits, and facilitating contact with local, county, and state officials.

Companies recognize the cost efficiencies and superior customer service public power provides. Municipal utilities don't have to pay dividends to shareholders, and those savings can be passed on to the utilities' customers.

Brenda Daniels
**Manager, Economic
Development**
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ELECTRICITIES
of NORTH CAROLINA, INC.
The energy behind public power

ELM Global Logistics

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866-577-0189 • elmlogistics.com



Bill Conboy
Founder & CEO

Our 3PL

The most important characteristic of a 3PL is their dedication to achieving success. For over 40 years ELM Global Logistics emphasizes pride in their work, best-in-class performance and long-term partnership relationships.

We put the P in 3PL:

Pride

Performance

Partnerships

ELM Global Logistics,
our 3PL.



ELM Global Logistics is a full-service, third-party logistics provider that has been tackling unique supply chain challenges for over 40 years. Our personalized approach to all our clients' needs is what sets us apart. We provide innovative logistics solutions while offering cost-effective solutions and speed to market to our customers.

Pride

Founded in 1979 by Bill Conboy, ELM Global Logistics operated with just a handful of employees in about 50,000 square feet of warehouse space in Long Island, New York. Over time, ELM Global Logistics has expanded its operations and now occupies more than 1,000,000 square feet throughout the Northeast region. Today, Bill continues to run the operation along with his wife, children, extended family and many dedicated employees who he feels contribute to the success and growth of this truly family-owned business.

Performance

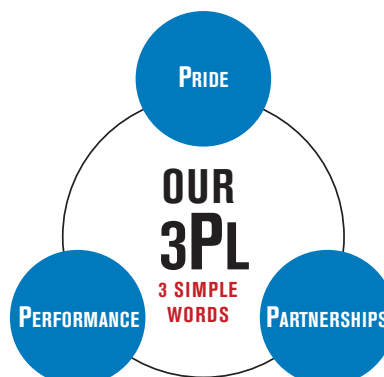
ELM Global Logistics offers highly tailored solutions and technology that provides all customers with accurate, real-time information. We offer a combination of powerful tools that can help manage your information, inventory, space and time. Long or short term, we offer you the flexibility to grow your business and let you focus on your core specialty. We combine methodical analysis of your material flow via intelligent application of systems designed to automate every step of the process.

We offer both shared and dedicated warehousing, e-commerce, packaging and fulfillment services, assembly, consolidation, cross-docking and transportation services. We are the largest in-house, full-service rail siding on Long Island that is connected to the freight lines of all major rail carriers.

Partnerships

We offer creative solutions that always encompass our customers' needs, rather than trying to fit them into a standard solution. Our tightly integrated partnership approach enables successful execution of complex supply chains.

Partnering with a diverse group of clientele, we offer a complete range of services while still offering the flexibility to customize our services to their needs. Offering customers creative solutions, rather than trying to fit them into a basic solution, has always been our strength and belief at ELM Global Logistics.



Engineering Innovation, Inc.

3601 Sagamore Pkwy N., Ste. Eii • Lafayette, IN 47904
800-350-6450 • sales@eii-online.com • eii-online.com



Don Caddy

Chief Operating Officer

To provide cutting edge solutions that offer maximum savings, excellent service and support, and best of class technology and engineering to our customers.



Since 2006 Engineering Innovation, Inc. (Eii) has been a market leader in the development of automation solutions for rapid package and mail processing. Our hardware and software systems enable clients to enhance productivity while reducing shipping and operational expense.

Eii adapts automation to your processing environment. Using our expertise in parcel automation, we offer custom processing solutions for postal, consolidator, delivery, cross-border, fulfillment, and reverse logistics applications.

The key in the parcel processing space is the ability to address a wide range of needs in the logistics market: barcode (license plate) scanning, package sizes and weights, throughput, sorting, dimensioning, labeling, optical character recognition, and more.

We call this Eii-Ability...

- **Flexibility**—Manual and automated options configured to your processing environment
- **Scalability**—We grow with your operation
- **Portability**—Quickly deployed, implemented, and trained
- **Profitability**—Affordable solutions and Quick ROI

Combining our process-engineering, data-acquisition, and imaging experience, Eii can provide its customers with sortation solutions that maximize throughput, efficiency, destination accuracy and ROI. We provide solutions that apply scan,

label, and sortation technology to your process to facilitate the receiving, storing, shipping, and the delivering of goods. We organize complex business logic into simple operator workflow, making it easy to act on the information you capture so you can respond precisely to your customers and the market.

As more consumers expect faster, more affordable shipping, Eii provides solutions that can scale as you do. With several modular designs, Eii offers your operation a smaller footprint with an easier, more cost-effective installation. These solutions include the **Chameleon™** and **EZ-WorkDesk™**—high-speed parcel processing platforms for induction into both warehouse (inbound) and shipping distribution networks (outbound). Also included is the versatile **LightSort™** sorting solution that gives you the flexibility to choose from a wide array of options to increase accuracy and efficiency with both pick- and sort-to-light capabilities.

We complement these great products by providing service and support after the sale, designed to ensure our customer's success. No matter what concerns your company faces, we are equipped to meet your needs and help you keep pace with your increasing volumes.

ENGINEERING™
i n n o v a t i o n

enVista

877-684-7700

info@envistacorp.com • envistacorp.com

About enVista

enVista brings 20 years of experience optimizing end-to-end transportation operations for shippers. We bring unmatched transportation consulting, strategic carrier sourcing, global freight audit and payment, business intelligence/analytics, transportation spend management, and TMS systems selections and implementation expertise to maximize transportation savings and results.

enVista is a global software, consulting and managed services provider, optimizing and transforming physical and digital commerce for the world's leading brands. enVista uniquely optimizes and transforms physical and digital commerce—optimizing supply chain efficiencies to drive cost savings, and unifying commerce to drive customer engagement and revenue. These comprehensive capabilities, combined with enVista's market-leading Unified Commerce Platform, and the firm's ability to consult, implement and operate across supply chain, transportation, IT, enterprise business solutions and omnichannel commerce, allow mid-market and Fortune 100/5000 companies to leverage enVista as a trusted advisor across their enterprises. Consulting and solutions delivery are in our DNA.

Let's have a conversation.™

www.envistacorp.com



Optimize your global transportation strategy and results with enVista. We deliver leading global transportation visibility and spend management solutions that significantly improve global transportation visibility, reduce costs and maximize transportation results for the world's leading brands. Our experienced team of transportation management experts and former carrier pricing managers brings exceptional expertise to help you improve your operations and attain your goals.

Our Services & Solutions:

- Global Freight Audit & Payment
- Strategic Carrier Sourcing
- TMS Selection & Implementation
- Vendor Dropship Management
- Transportation Consulting
- Business Intelligence
- Trading Partner Management
- Network Optimization

Our Expertise:

- 1,000+ global clients across multiple industries
- \$6 billion in spend managed annually
- 14+ languages translated and 168 currencies on freight data platform
- Highly experienced team of transportation experts
- Inc. 500|5000 fastest growing transportation & logistics company (eight consecutive years)

enVista®
enabling enterprise commerce™

eShipping

10812 NW 45 Hwy • Parkville, MO 64152
816-505-0198 • Connect@eshipping.biz • eshipping.biz



Chad Earwood
CEO

Vision Statement

To be the best distribution chain management company in the United States by developing complete people and complete solutions.



Founded in 2004, eShipping helps companies take control of their distribution chain to reduce costs and improve customer experience. We start by identifying and collecting all layers of available data within your distribution chain to build a virtual perimeter around it, which clarifies areas in need of optimization and mission information.

After collecting the data, our team works with you, using insights into your data, to create a proven strategy that reduces costs and improves customer experience. Our team aligns with yours operationally to implement the strategy and continuous improvement practices throughout the distribution chain.

Covering All Modes

■ **LTL.** Our less-than-truckload services go beyond basic rates and technology, offering clients a proactive method of managing LTL from end to end.

■ **Truckload.** Our full truckload services can be customized to the needs of any shipper, whether you have a single shipment that needs quoting, or an entire FTL program to manage. Truckload services include flat bed, dry van, temperature controlled, over-dimensional, hot shot, expedited, consolidation, and partial truckload.

■ **International Services.** As a licensed freight forwarder, NVOCC, Indirect Air Carrier, and U.S. Customs Broker, we offer comprehensive international services and technology to clients globally. While our service offerings are similar to other providers, we pride ourselves in our commitment to doing fundamental services exceptionally well.

■ **Parcel.** We focus on empowering parcel clients with the business intelligence and expertise they need to successfully manage their parcel programs and capture significant savings on their bottom line.

■ **Specialty Modes.** Our team is equipped to handle complex transportation programs, including specialized modes such as Domestic Air, Hot Shot/Expedited, Courier, Rail, and Drayage.

■ **Warehousing and Distribution.** Through eShipping Distribution Services, we offer state-of-the-art warehousing and distribution services while maintaining compliance, security, and operational integrity for this critical stage of the supply chain.



Evans Distribution Systems

Corporate Headquarters • 18765 Seaway Dr. • Melvindale, MI 48122
1-800-OK-EVANS • sales@evansdist.com • evansdist.com



John A. Evans
President

Mission Statement

To be a strategic supply chain partner, admired for our people, passion and innovation.

Nine Point System

1. Listen
2. Innovate
3. Communicate
4. Assign Responsibility
5. Set Standards
6. Document
7. Implement
8. Monitor
9. Review

Evans Distribution Systems is a 90-year-old, full-service third-party logistics company located in Detroit, Mich. We operate seven warehouse facilities totaling nearly three million square feet. Our transportation operation includes 100 trucks, 150 drivers and 2,500 partner carriers. We operate from our five core business units:

- **Warehousing** – Dedicated, contract, bonded and Foreign Trade Zone.
- **Fulfillment** – Integrations, same-day order processing, order tracking and custom reporting.
- **Value-Added Services** – Contract packaging, shrink wrap, kitting and quality inspection.
- **Transportation** – Asset-based and non-asset-based transportation management solutions.
- **Staffing** – Scalable staffing solution that provides qualified and vetted logistics employees.

Reputation

Since 1929, Evans has earned a reputation for quality and trust from our customers, partners, and employees. We go above and beyond to support our local community and the health and safety of our employees. Evans has received *Inbound Logistics'* Top 100 3PL recognition for 18 consecutive years.

Expertise

For 20 years, Evans has been ISO 9001:2015 certified. Quality objectives and goals are established for all levels and processes throughout the organization to meet requirements to drive performance improvements. In addition, one million square feet is classified as Foreign Trade Zone and U.S. Customs Bonded. Three of our warehouse facilities are FDA food-grade registered and the asset-based transportation division is SmartWay certified.

Scalability

Our customers tend to experience exponential growth when working with Evans.



Through our seven locations, we can adapt to long-term or short-term contracts and shift our associates based on our customers' needs and volume. Our diversified service offerings and staffing solutions allow us flexibility to accommodate shifts in our customers' businesses.

Technology

Technology is the backbone of the supply chain. With a dedicated IT department, Evans is committed to providing the latest software, hardware and data-driven solutions to our customers. From machine vision/AI automation systems, to warehouse and transportation management software, to RF barcode scanning, EDI/API connectivity, and e-commerce integrations—we use technology to optimize performance. Customers have real-time visibility into their inventory and shipments from our data portal.

Diversification

Evans serves diverse industries and business models. Industries range from consumer goods, furniture, automotive, food and beverage, chemical, hazmat, raw materials, robotics and more.

Discover Why It's Easier with Evans

We simplify complex supply chains so that you can do what you do best—manage and grow your business. Discover why it's easier with Evans by contacting us at sales@evansdist.com or 1-800-OK-EVANS.



Evergreen Line

Evergreen Shipping Agency (America) Corp. • One Evertrust Plaza • Jersey City, NJ 07302
201-761-3000 • evergreen-line.com

FULL STEAM AHEAD **Dedicated to Enriching** **Your Life**

For 50 years and beyond, Evergreen Group has relentlessly explored more possibilities, building a comprehensive network at sea, on land and in the air.

Our pursuit of service excellence leads us to navigate our way to every corner of the world, enriching people's lives and creating a better future.



Composed of the five shipping companies of the Evergreen Group, Evergreen Line is one of the world's largest container carriers, offering a capacity of approximately 1,300,000 TEU. 'Evergreen Line' refers to Evergreen Marine Corp. (Taiwan) Ltd., Italia Marittima S.p.A., Evergreen Marine (UK) Ltd., Evergreen Marine (Hong Kong) Ltd. and Evergreen Marine (Singapore) Pte Ltd. Evergreen Line was established and has grown in response to the requests and expectations of global customers. Its maritime activities contribute more than \$2.7 billion to the US economy.

As part of the East/West Trade OCEAN Alliance, Evergreen has the ability to provide cargo space on 330 vessels to 147 ports with 284 port calls per week. The company's global network offers 313 offices and agents located in 117 countries around the world.

The carrier has been certified by the Customs Trade Partnership Against Terrorism (CTPAT) since 2002. Since May 2004, all vessels operated by Evergreen are certified by the International Ship and Port Security Code (ISPS) for compliance. Evergreen's E-Commerce capabilities—considered among the most up-to-date in the industry—have been recognized by numerous groups and have been honored for excellence for four consecutive years by Log-Net, which gathers information from carrier users.

To further enhance service quality and competitiveness, Evergreen maintains its fleet renewal program as it continues to

deploy vessels within the most suitable trades. Under this program, the company has deployed additional new vessels during 2020 and continues to move forward with its announced plans for fleet deployment, increasing capacity from 2019 levels by more than 30% through 2023 to a total of nearly 1,700,000 TEU. Introducing this additional capacity allows Evergreen to continue the replacement of older tonnage currently in operation, optimizing the efficiency of its operating fleet and enhancing its competitiveness within services. While building and upgrading its fleet, Evergreen Line intends to maintain each of the services it currently operates and will develop within new trades to meet the needs of its worldwide customer base.

Evergreen recognizes its obligation to conduct affairs constructively as a corporate citizen and has established an occupational Safety, Quality and Environmental Protection Management System for its container ships and shore-based personnel. The company is committed to being a responsible steward of our surroundings and its S-type Green Ships are outfitted with numerous features specifically designed to protect our environmental treasures. Evergreen Marine Corp. previously raised its first Green Bonds initiative with proceeds specifically earmarked for improving energy efficiencies, preventing and controlling pollution and developing strategies for a sustainable environment worldwide.





George Kontoravdis,
Ph.D.
President

Mission

Provide logistics collaboration solutions to help customers streamline their supply chain, reduce operating costs, and improve productivity.



Fortigo offers one-stop collaborative logistics services to streamline the supply chain. Whether you are sending a letter, box, pallet, or shipping container, Fortigo TMS efficiently manages the ship-to-delivery workflow, reduces operating costs, improves productivity, and enhances collaboration with carriers and vendors, all from a cloud-based system.

For companies seeking to enhance savings, 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.

Contact us at info@fortigo.com to set up a demo and learn more.

FORTIGO

Freight Management, Inc.

2900 E. La Palma Ave. • Anaheim, CA 92806
714-632-1440 • freightmgmt.com



Robert Walters
President

Mission Statement

We will be the staff our clients require to reach goals and achieve their vision.



Over 50 years ago, Freight Management Inc. (FMI) began a revolution in Freight Cost Management and Freight Audit Services, reducing shipping costs for its customers. We were among the first to provide this service from which we derived our name: Freight Management—to save businesses time and money on their total freight operations.

Today, FMI remains one of the industry's most experienced, knowledgeable and capable providers of logistics management, including freight audit and payment services.

We offer flexible, customized client solutions based on the size, budget and goals of your company. In fact, one of our greatest strengths is applying our knowledge to your particular needs. Our competency and creativity in freight management put us on the leading edge of technology with useful, accessible tools for our clients.

FMI is not carrier-owned. And, because of our long-standing independence,

we're unsurpassed in our ability to develop fresh game plans to adapt rapidly to changes that could impact your business. Being quick on our feet is one of the most potent skills we possess to keep your company ahead of the competition—and, of course, save you money.

Our number one source of business is our outstanding customer satisfaction. With many of our partnerships more than 10 years old, long-term relationships are at the heart of our service philosophy. We service a wide array of well-known clients. And, although we're not limited to working with any particular carriers, we also have longstanding relationships with all well-known carrier companies.

Looking towards the future, a large percentage of FMI's expenditure goes toward the development of new software and tools that enhance our logistics services and maximize freight program effectiveness. With feedback from customers and carriers alike, our

dedicated Information Technology department continuously improves and delivers innovative logistics solutions for you.

FMI plays an integral role in the development of Electronic Data Interchange systems and Automated Shipment Notifications for supply chain optimization. A few examples of the technological edge available to FMI customers include online pre-rating of shipments, up-to-the-minute visibility of product transit and the ability to interface with any shipper's software.

Additionally, our clients receive personalized and confidential website access with a number of online services and benefits, including the ability to rate freight shipments before they leave the dock.



Generix Group North America

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Philippe Gautrin
CEO

At Generix Group North America, we have been developing and implementing best-of-breed supply chain execution solutions since 1997—including our highly flexible Solochain WMS. We help our clients keep their customer commitments by supporting them in the digital transformation of their supply chains.

We believe in innovation, knowledge, leadership, and integrity. Our driven and dedicated team of executives, business analysts, software and logistics engineers has a singular mission: provide the best supply chain execution solutions that create real, tangible, and value-enhancing benefits for our customers.



Generix Group North America is a division of the Generix Group SA, a global expert in collaborative supply chains that develops and implements advanced supply chain execution solutions. With implementation sites spanning the globe, and a global team of 600+ experts, they have helped more than 6,000 clients in manufacturing, wholesale, retail, and third-party logistics profitably grow their supply chain operations for more than 20 years.

Supporting Agile Supply Chains

Generix Group North America provides a series of solutions within our Supply Chain Hub to create efficiencies across the entire supply chain. From Warehouse Management Systems (WMS), to Manufacturing Execution Systems (MES), to Transportation Management Systems (TMS) and more, our software platforms can deliver a wide range of benefits that vastly improve your warehouse bottom line.

Our Supply Chain Hub enables companies to execute the physical flow of goods and digitize the flow of information, easily connecting to ERP, WES, and other internal systems. Our clients include many small, medium, and large-scale operations in North America and Europe including Brock Supply, Blue Streak Electronics, Marucci Sports, Danone, Domino's Pizza, and many others.

Solochain WMS, our advanced Warehouse Management System, is a highly flexible and adaptive solution built for

companies that need their supply chains to be nimble, efficient, and scaling, while ensuring execution excellence. Solochain's ease of configuration and customization, including built-in MES functionality, is praised by customers with multi-channel needs. Solochain WMS is listed in Gartner's Magic Quadrant for Warehouse Management Systems and has been performing in more than 500 warehouses across North America.

Does your company need to track and trace inventory, as well as manage your workforce, with real-time visibility, while automating increasing workflow throughput with advanced business rules? Could you benefit from increased picking productivity, exceptional inventory accuracy and visibility, order accuracy, and expedited inbound activities?

Our supply chain solutions help organizations navigate the new paradigms of change in the aftermath of COVID-19, including "Enabling Warehousing Resiliency" as a key strategic initiative for companies wanting to do more than survive—but rather thrive—in today's shifting business landscape.

generix GROUP 
COLLABORATE » ACCELERATE

GEODIS

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1-615-514-0331 • michelle.johnson1@geodis.com • geodis.com/us



Mike Honious
CEO

We help our clients succeed by overcoming logistical constraints.

- 50,302,996 ft² warehousing space
- 229 locations
- 48 Freight Forwarding offices servicing 120+ countries of destination
- 17,700+ employees
- Inbound Logistics Top 100 3PL Provider from 1999-2020 and Logistics Quarterly Top 40 North American 3PLs



GEODIS combines global reach with local know-how. Put those together, and you have the key to logistics success. Our vast experience and network in the Americas give you everything you need to serve your customers well, partnering in e-commerce logistics, freight forwarding, transportation management, and value-added warehousing.

E-COMMERCE LOGISTICS

GEODIS offers a dedicated e-commerce logistics team and a workflow engine with time-and-budget modeling operating at a 98% success rate for brands ready to expand exponentially. Our solutions easily connect with yours, giving a real-time, global view for control and visibility.

VALUE-ADDED WAREHOUSING

GEODIS offers a premium network of multi-tenant warehouse operations. Our network can reach 99.5% of the U.S. population in two days or less. Additionally, GEODIS offers value-added services to simplify supply chains and give clients a competitive advantage, from packaging customization to customer experience services.

FREIGHT FORWARDING

GEODIS offers Air & Ocean Freight solutions for all types of national and

international freight shipments. No matter your need, we'll listen to your requirements, and find the Air & Ocean shipment configuration for you. Additionally, we provide value-added services to ensure the right solution timing, level of complexity, and cost.

TRANSPORTATION MANAGEMENT

GEODIS' Transportation Management Solutions optimize the movement of products throughout your supply chain. Our team uses their expertise, industry partnerships, and trusted tools and tier-one technologies to deliver the most reliable, low-cost solution for your transportation strategy. From inbound through to the final mile, our experts will provide you with the capability, flexibility, and scalability needed to build a growth-enabled supply chain.

CAPACITY SOLUTIONS

GEODIS Capacity Solutions provides freight brokerage and transportation solutions to meet your needs, whether it is a dry van, refrigerated trailer, flatbed, or other specialized equipment.



GEODIS

Georgia Ports Authority

PO Box 2406 • Savannah, GA 31402 • 912-963-6995 • gaports.com
Chris Logan • Sr. Director, Trade Development, BCO Sales



Griff Lynch
Executive Director

OUR MISSION

The Georgia Ports Authority's mission is to empower entrepreneurs, strengthen industries, sustain communities and fortify families by relentlessly striving to accelerate global commerce.



GPA's Mega Rail Project Now Operational

The Port of Savannah is the Southeast's busiest intermodal gateway. However, the Georgia Ports Authority is making a series of infrastructure improvements that set the stage to capture greater market share.

Key to expanding rail service is the Mason Mega Rail Terminal, a project linking Garden City Terminal's two rail yards.

Phase I of the project is now operational, allowing GPA to build and receive up to six 10,000-foot-long trains on terminal. Upon full completion, the rail expansion will improve efficiency and increase terminal rail lift capacity to 2 million TEUs per year. The capacity for longer trains builds density into the system and enables rail providers CSX and Norfolk Southern to deliver faster, more frequent rail service to major markets such as Memphis and Chicago.

Bolstering Intermodal Strengths

From ship to shore to on-terminal rail, the speed and efficiency of GPA's intermodal services are unmatched. With the addition of the Mason Mega Rail Terminal, service to inland markets becomes more competitive.

- GPA already features 27 trains per week to and from locations around the Southeast. Added capacity will provide new options, delivering reliable, consistent access to additional markets.
- Savannah offers the fastest westward transit times in the South Atlantic region.
- Port of Savannah customers moving containers by rail enjoy superior speed and reliability, with most cargo moving from vessel to rail within 24 hours.
- Savannah rail providers Norfolk Southern and CSX Transportation provide doublestack container trains along the entire route between Savannah and the Midwest.
- Consistent, congestion-free movement from ship to rail cuts expenses and speeds delivery directly to the customer.
- As the first port of call on many Panama Canal shipping services, the Port of Savannah provides additional assurance of on-time cargo arrival.

Find more information at gaports.com



GlobalTranz

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Bob Farrell
Chairman and CEO

Freight Driven by
Technology

Solutions Offered:

- TMS for shippers, logistics service providers and carriers
- Managed Transportation
- Supply Chain Solutions
- LTL
- Truckload
- Partial Truckload
- Expedited
- Intermodal Rail
- Air & Ocean
- Parcel & Small Package
- Project Logistics
- Mexico Cross-Border
- Final Mile Delivery
- White Glove & Home Delivery
- Reverse Logistics
- Dedicated Fleet Services



With additional offices in:
Atlanta, GA • Charleston, WV
Chattanooga, TN • Chicago,
IL • Dallas, TX • Eagan, MN
Minneapolis, MN • Colonia
Nápoles, Mexico • Niles,
IL • Prescott Valley, AZ •
Riverside, CA • Salt Lake City,
UT • Tulsa, OK



Whether you're looking to drive cost savings, simplify your logistics operations, or create competitive advantage from your supply chain, GlobalTranz has the logistics solutions and technology to help your business grow.

GlobalTranz is more than a 3PL. We're a strategic partner providing award-winning logistics solutions and cloud-based multi-modal Transportation Management System (TMS) technology for shippers of all sizes.

Driven by our technology

Built to address real-world logistics challenges, GlobalTranz's TMS powers everything from fast rating, booking and freight management to real-time tracking, freight pay and audit, reporting and business intelligence. Load your own tariffs or use our rates and network of 50,000+ pre-qualified carriers. GlobalTranz's TMS simplifies logistics management, drives automation and delivers end-to-end supply chain visibility.

Powered by our people

Operational efficiency is our prime objective. It doesn't matter if you're an enterprise or small-scale shipper, local or national, first-time customer or long-time client. GlobalTranz will help you find the best solutions for your logistics needs. We'll work as your partner to provide supply chain planning, day-to-day execution and strategic recommendations to reduce your freight costs, improve operational processes and give you a competitive advantage.

GLOBALTRANZ®
Freight driven by technology.

Gulf Winds

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713-234-1993 • 866-603-3827 • pricing@gwii.com • gwii.com

Gulf Winds believes that together, we're a driving force. As part of your freight forwarding team, we can do great things. We're in the business of simple significance—the best processes are simple to understand, simple to use but can produce significant results.

In an industry that's anything but simple, we strive to bridge that gap for our clients. Gulf Winds is redefining expectations for intermodal trucking through innovation, people and purpose.

Vision

Our vision is to achieve consistent growth, by exceeding customer expectations at every touchpoint.

Mission

To glorify God by providing world-class logistics services through continual investment in our people, clients, community, and the world we live in.



Gulf Winds is a leading drayage, transloading, and domestic freight provider serving importers and exporters from around the globe.

Because of its commitment to continuous investment in technology, people, and supply chain infrastructure, Gulf Winds stands alone as the largest and most robust transportation provider for Port Houston—with locations in Houston, Dallas, Ft. Worth, Mobile, and Memphis.

Drayage

With more than 440 trucks in the Gulf region and more than 1,400 owned chassis, Gulf Winds has the container drayage capacity and flexibility to deliver.

Transloading

Gulf Winds' unique port-side locations allow you to ship heavy and leverage one-way van rates to reduce your ocean and inland transportation costs.

Truckload

Simplify your supply chain with one point of contact from port to door. We manage the details to the final mile, so you can stay focused on the bigger picture.

Visibility

It's 2021. Trucking capacity isn't enough. You need visibility. Fast, accurate, personalized, and actionable. Don't worry. We deliver that too.

Our Values

- Humility
- Integrity
- Compassion
- Stewardship
- Excellence



Holman Logistics

253-872-7140 • solutions@holmanusa.com • holmanusa.com



Brien Downie
President

Our Core Purpose

Established in 1864, Holman exists to envision and bring into reality new concepts and ideas that help businesses operate more efficiently and cost-effectively in order to improve the lives of people everywhere.

We strive every day to live by our Core Values:

- Safety Focus
- Be Better
- Show Respect
- Serve Others
- Extraordinary Service



With headquarters in the Pacific Northwest and operations across the U.S., we provide public and contract warehousing, manufacturing logistics, plant support, transportation, shuttle, collaborative logistics, and omnichannel fulfillment services.

We Are Experts in Partnering with Manufacturing Operations

We perform manufacturing logistics for both consumer packaged goods and durable goods clients, managing raw material inventories, material usage planning and delivery, quality control, lot control, and facilities maintenance.

We Provide a Broad Array of Ground Transportation Services

Our transportation services vary from truckload and LTL deliveries to spotting and shuttle services. Holman regularly pools LTL deliveries across customers to realize transportation savings.

We Have Experience in Your Industry

We serve a wide variety of industries including CPG, paper products, foods and beverages, food packaging, pet foods, electronics, home appliances, heavy equipment, and raw materials.

We Create Lasting Relationships with Our Customers

As a privately-held company, we are not subject to shareholder requirements and quarter-by-quarter market results. This flexibility allows us to both believe in and create lifetime relationships. We choose to invest in our people, in our processes, and in our clients.

Your Search for the Perfect Partner Is Over

The average length of our strategic customer relationships is over 36 years! We keep that business by providing Extraordinary Service. We know that your supply chain must add value to your product and to your customer's experience. Holman expertise helps ensure that your customers build lifetime relationships with your business as well.



**Extraordinary Service for
Over a Century**

Follow us on:

Hoosier Energy

2501 South Cooperative Way • Bloomington, IN 47403
Direct: 812-876-0294 • Hoosiersites.com



Harold Gutzwiller

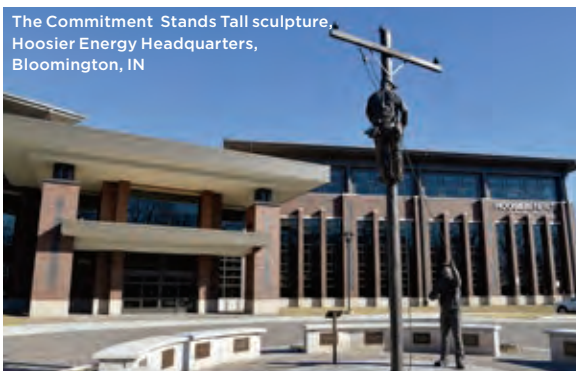
*Manager of
Key Accounts and
Economic Development*

Mission Statement

To provide member distribution systems with assured, reliable and competitively priced energy and services in a safe and environmentally acceptable manner.



The Commitment Stands Tall sculpture,
Hoosier Energy Headquarters,
Bloomington, IN



Hoosier Energy is a non-profit generation and transmission cooperative (G&T) that provides wholesale power and services to 18-member distribution cooperatives.

Collectively, Hoosier Energy's member cooperative network operates and maintains more than 36,000 miles of distribution lines and provides electric service to nearly 300,000 consumers or about 650,000 people in 59 counties in southcentral and southern Indiana and southeastern Illinois.

Hoosier Energy's interconnected transmission network includes nearly 1,700 miles of high-voltage power lines, 25 transmission stations and about 300 delivery points.

Commitment to a Sustainable Future

In January 2020, Hoosier Energy announced Board approval of a new long-range resource plan. While preparing for that announcement and the year-long planning process that led up to it, Hoosier Energy collectively prioritized what matters most to its commercial and residential consumers about the resources that provide their electricity. As such, the new plan meets those priorities. It's designed to provide reliable, affordable and sustainable energy while saving members an estimated \$700 million over the next two decades.

As part of the plan, Hoosier Energy expects to retire its remaining coal-fired generating station—which represents one half of its total energy supply—in 2023 and transition to a more diverse generation mix that includes a combination of wind, solar, natural gas and storage. This diversity provides a foundation for supply cost stability and predictability while reducing its carbon footprint by nearly **80 percent**.

Commitment to Economic Development

Hoosier Energy is also committed to improving the communities its member cooperatives serve throughout southcentral and southern Indiana and southeastern Illinois. Hoosier Energy has a dedicated Economic Development Team that focuses on attracting commercial and industrial growth, resulting in increased capital investment and job opportunities throughout its member service territory.

The Indiana and Illinois economic development program at Hoosier Energy provides comprehensive economic development services throughout our service territory. Some of these services include:

- Shovel-ready site listings
- Electric usage cost estimates
- Searchable business maps
- Searchable sites and buildings maps
- Personalized assistance

Today, you don't need to choose from among reliability, affordability or sustainability; the member cooperatives of Hoosier Energy deliver all three. Contact the Hoosier Energy Economic Team to learn more about how they can assist you with your site location and expansion needs.



Hopewell Logistics

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LESS CHAIN. MORE SUPPLY.

Hopewell Logistics provides third-party logistics services to some of the world's largest and best-loved brands. We serve the Canadian market from multiple National stand-alone and campus-based distribution centres. We offer a complete suite of supply chain solutions to support large scale transitions for all your fulfilment needs.

OUR PHILOSOPHY

Operational Excellence

Expertise and continuous improvement that drives efficiency, reduces cost and delivers measurable results.

Transparency

Building trust with our clients through open and collaborative partnerships.

Commitment to Team

From one of the best safety records in the industry to career and leadership development, Team is more than a word, it is a way of business, a way of life and a promise for the future.

Proudly Canadian Owned and Operated

Founded in 1996, Hopewell Logistics is part of the Hopewell Group of Companies. Hopewell's commitment to operational excellence, teamwork, innovation and sustainability has helped us become one of Canada's Best Managed Companies.

Today, Hopewell provides third-party logistics services to some of the world's best-loved brands and operates multiple stand-alone and campus-based distribution operations across Canada.

We continue to drive operational excellence and continuous improvement at all of our sites and offer a complete suite of supply chain solutions to help you deliver world-class service to your customers, including:

Dedicated Warehousing & Order Fulfillment

Warehousing and Distribution are at the core of our business. We operate multiple +500,000 sq ft warehouses across Canada and ship to all major retailers. Our team of experts can custom design or accommodate your existing facility and operations in addition to tailoring solutions to businesses of any size.

eCommerce Fulfillment & Delivery Solutions

Hopewell's flexible and customizable solutions can help you overcome the challenges of omni-channel fulfillment and meet growing consumer demands with speed and accuracy. Whether you are a large retailer or small to medium enterprise looking to outsource your ecommerce fulfillment, our full-service logistics solutions can aid you in creating a seamless buying experience for your customers.

Transportation Management

When it comes to moving products, Hopewell has a Transportation Solution for you. Our Transportation Management System provides a top-shelf infrastructure



to support our best practice procedures and trained personnel to ensure the operation is calibrated for your business. Our services include order tracking, OS&D, claims management, billing, and compliance management, among many other features.

Continuous Improvement

At Hopewell, exceeding KPIs is a way of life. Our team has led and participated in many Continuous Improvement initiatives with our clients, including Six Sigma, facility design and re-engineering, data modeling, and work-force management implementation.

Network Evaluation & Design

Whether you are looking to design a site network strategy, multi-temperature zone locations within a site, or just figuring out the best place to put the washroom, we can help.

Value-Added Services

We offer several value-added services, including:

- Transition and Change Management
- Contract Packaging (Co-Pack) Solutions
- Information Technology Services
- Shunt and Shuttle Services



Hub Group

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David P. Yeager
Chairman & CEO



Phillip Yeager
President & COO



Hub Group is a leading supply chain solutions provider. We transform your business goals into achievable strategy with end-to-end transportation and logistics management solutions. We bring a team of the industry's top experts to each opportunity, crafting scalable solutions that drive long-term value. Backed by our own assets, we offer the industry's most flexible multimodal solutions, each customized to match your unique needs. With a single point of contact, a robust lineup of tech-enabled assets and strong third-party relationships, you'll access the right support and the right solutions at the right time. Through our industry-leading technology and sustainability initiatives, we are poised to help you conquer supply challenges of today while enabling the solutions that move your business forward.

Transportation Solutions

Our scalable asset-backed services power the supply chains of customers from nearly every industry across North America. Whether you take advantage of 41,500 Hub Group-owned containers for a reliable intermodal solution or harness our network of nearly 4,000 drivers and buying power with top carriers for a seamless over-the-road solution, a team of experts work on your behalf to drive performance across your supply chain. We take capacity-assurance a step further, providing a safety award-winning Dedicated solution custom-fit for your unique supply chain needs and commodity type.

continuous improvement initiatives that deliver immediate value while aligning your business for long-term success. For retail-bound shippers, our CaseStack Retail Supplier Solutions ensure better performance and compliance for crucial customer relationships. With global capabilities, we can provide one point of service and contact that can extend from your overseas plant to your customers' doors with precision, leveraging trusted carrier and warehouse facility relationships.

Logistics Management Solutions

Hub Group's Logistics Management solutions view capacity as just part of the equation, deploying advanced optimization techniques, a leading TMS and a robust service lineup to deliver guaranteed savings and service throughout your end-to-end supply chain. Our network engineers use award-winning processes to analyze your multimodal network, crafting

Announcing NSD® Last Mile Solutions

New to the Hub Group family, we're proud to offer award-winning Last Mile services across the United States. We leverage a network of over 200 terminals to service 42,000+ ZIP codes with flexible, tailor-made last mile services. Whether it's a basic curbside delivery or advanced white glove services, we can work alongside your company to ensure quality and brand control to deliver ultimate customer satisfaction.



ID Logistics

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Eric Hémar
Chairman & CEO

ID Logistics' mission is to deliver value to our clients with innovative supply chain solutions that improve service, quality, and costs. ID Logistics is driven by strong values that guide our expansion: entrepreneurship, operational excellence, high standards, and sustainable development in collaboration with our employees, clients, and partners. We are committed to corporate responsibility as an employer and a contributor to the economies of the communities surrounding our facilities. We also take action to protect the environment through innovations that reduce pollution, energy consumption, and waste.

NYSE Euronext Paris Ticker
ID: IDL



ID Logistics is an international supply chain solutions provider, with more than 320 sites and 21,000 employees across 17 countries, representing 62 million square feet of warehousing facilities in Europe, America, Asia and Africa. With a client portfolio balanced between retail, e-commerce, consumer packaged goods, fashion, beauty products and electronics, ID Logistics delivers innovative contract logistics solutions and is firmly committed to sustainable development.

ID Logistics develops and operates dedicated and multi-client supply chain solutions tailored to each customer's project requirements. Thanks to a proven capacity for innovation, an expertise in automation and a real desire for sustainable development, our employees are committed to a culture of continuous improvement and operational excellence. In 2020 we implemented 117 different innovation projects across our network, including automated packaging systems, AGVs, robotic picking, inventory drones, and virtual reality training. These strengths have allowed ID Logistics to reach the leading edge in e-commerce logistics, a rapidly expanding sector. ID Logistics' aim is to offer solutions to our clients that improve service, provide increased efficiency and flexibility, and use innovation to differentiate us from

other providers. This commitment extends beyond achieving operational excellence in the present state, but also to anticipating the future needs of our customers and to be prepared to meet them.

Since 2001, ID Logistics has steadily expanded its supply chain management activities worldwide, achieving revenues of USD 1.7B in 2019, and most recently broadening its geographic coverage with a strategic expansion into North America. The objective will be to continue to expand its North American customer base and scope of services through both organic growth and strategic acquisitions. The high standards embedded in our DNA will propel our expansion and allow us to continue to deliver the same operational excellence and supply chain innovation in North America that we have for two decades for countless satisfied customers worldwide. Contact us to find out how ID Logistics can support your supply chain.



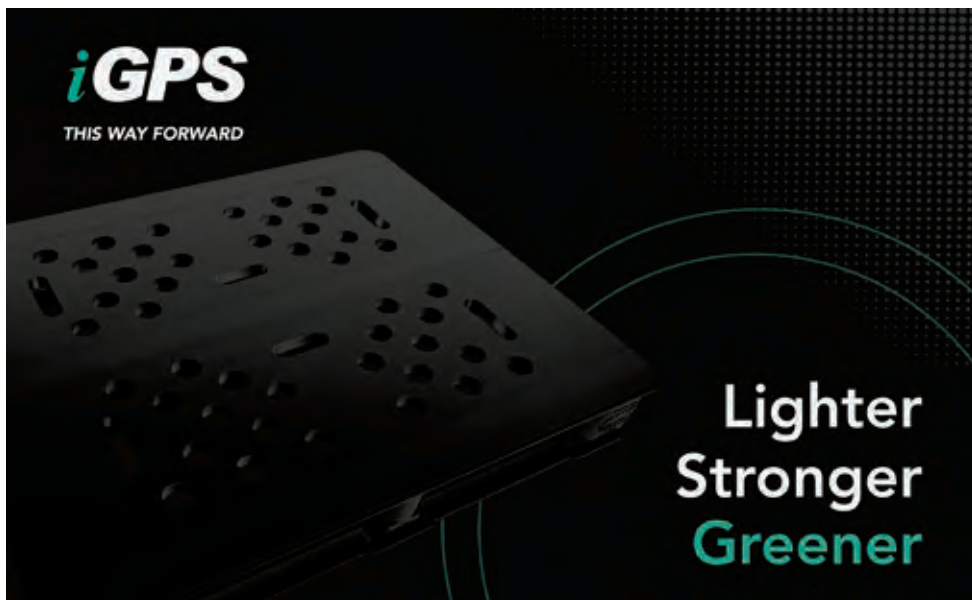
iGPS Logistics LLC

225 E. Robinson St., Suite 520 • Orlando, FL 32801
866-806-2672 • info@igps.net • igps.net • [linkedin.com/company/igps](https://www.linkedin.com/company/igps)



Jeff Pepperworth
President & CEO

iGPS provides innovative, world-class supply chain solutions that promote environmental sustainability, improve automation, and create unmatched value for our customers, employees, partners, and investors.



iGPS: Moving the Market Forward Through Sustainable Supply Chain Solutions

At iGPS, sustainability and respect for our environment are central to our mission and core values. We are continuing to lead a paradigm shift in the pallet pooling business to our all-plastic, recyclable pallets with embedded radio frequency identification (RFID) tags.

Our pallets are lighter, stronger, safer, and greener—better for your products, and better for our planet. Here are just some of the ways in which iGPS promotes sustainability for the supply chain:

- **STRONG & DURABLE**—iGPS pallets are built with High Density Poly Ethylene (HDPE), ensuring a long life. They are also edge-rackable, boasting a 2,800-lb. evenly distributed load capacity.
- **SAVES FUEL**—Up to 35% lighter than typical multi-use wood pallets, our all-plastic pallets require less fuel and cost to transport.
- **REDUCES POLLUTION**—By requiring less fuel for transport, our pallets reduce pollution and greenhouse gas emissions.
- **SAVES PRECIOUS RESOURCES**—100% recyclable. If a pallet is damaged

it is molded into a new one, making its useful life indefinite.

- **REDUCES PRODUCT DAMAGE**—Our pallets' near full-top deck coverage provides superior strength that reduces product damage and returned loads, adding efficiency to the supply chain.
- **IMPROVES WORKER SAFETY**—No protruding nails or splinters that endanger workers and damage equipment. Plus our pooled pallets' lighter weight (50 lbs.) meets CBA and NIOSH standards, reducing the risk of workplace injuries.
- **ENHANCES HYGIENE**—Unlike wood pallets, our pallets do not absorb liquids that lead to contamination, are impervious to insects, and require no toxic fumigation or other treatments.
- **ENABLES PRODUCT TRACKING**—Embedded RFID tags on all four sides provide supply chain transparency.
- **SIMPLER ADMINISTRATION**—Our pallet tracking system eliminates cumbersome paperwork and needless labor costs.

Maximize the sustainability of your supply chain while reducing your total cost of business. Call 866-806-2672 today to get started!



Intelligent Audit

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Phone: 201-880-1110 • Fax: 201-809-2616 • intelligentaudit.com



Hannah Testani
Chief Operating Officer

Mission Statement

For over two decades, Intelligent Audit has been an industry leader in freight audit and payment through our extensive approach to business intelligence and spend optimization.

IA's proprietary technology allows our customers to micromanage every aspect of their transportation through 750 standard reports with functionality to filter down practically any data point imaginable.

Intelligent Audit customers span from Fortune 10 down to mid and small-sized companies. In 2020 we managed over **\$23.4 billion** in annual transportation spend on behalf of your 2,800+ customers.



Intelligent Audit is the technology leader in freight audit & recovery, business intelligence, and transportation spend optimization.

Using our proprietary technology, paired with a team of strategic account managers, we are able to help some of the largest and most complex global shippers analyze, benchmark, optimize, and gain critical insights into their global transportation network. With best-in-class audit and reporting technology, clients can leverage their data to reduce costs, enhance real-time visibility, and improve the end-customer experience.

With more than 2,800 clients representing over **\$23.4 billion** in annual transportation spend and over **980 million** shipments audited in 2020, Intelligent Audit prides itself on providing customers with the tools and insights to help them ship smarter.

Intelligent Audit's services include:

Freight Audit & Recovery

Intelligent Audit was the first company to automate the freight audit & recovery function in the industry. Our application systematically audits over 150 data points across all modes of transportation globally. Within a few hours of receiving the invoice, it is completely audited, GL coded, and available for reporting immediately. The system looks for discrepancies based on service issues, invoicing issues, and contractual issues.

Business Intelligence and Analytics

On-demand reporting that spans from dashboards gives our customer high-level visibility and KPIs as well as real-time alerts to any anomalies captured and analytical reports that help make more cost-effective decisions like consolidation opportunities or air to ground downgrade opportunities. Additionally, we provide detailed financial reports outlining general ledger (G/L) coding and open accrued invoice costs for the AP team to book internally. Our reporting is all real-time and interactive with no latency in the data presented.

Spend Optimization

Leveraging our technology, shippers can determine the optimal carrier, service, and locations to ship from to achieve the best time in transit at the lowest possible costs that fit into your business strategies. Through a comprehensive review of shipping data, Intelligent Audit helps its customers find savings opportunities specific to their strategic goals by utilizing our 750+ standard reports including but not limited to, service optimizations, carrier utilization, mode optimization, ship from strategies, zone skipping, DC optimization, and more!

Secured Freight Payment

Streamline carrier payment processes to remove the administrative burden of remittance to numerous counterparties with the security of Triumph Bancorp, Inc. (Nasdaq: TBK), a publicly-traded financial institution and leader in carrier payment technology and supply chain financing.



ITS Logistics

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Scott Pruneau
Chief Executive Officer

VISION STATEMENT

ITS Logistics exists to improve the quality of life by delivering excellence in everything we do.

ITS CORE VALUES

Safety First: Be safe. Always

Integrity: Doing what is right, ethical and moral

Respect: Treating others with dignity

Teamwork: Working effectively together

Quality: Consistently exceeding expectations

Continuous Improvement: We always want to be better

Compassion: Awareness and respect of others

Having Fun: Being passionate in all we do and having fun doing it

Results: Because results matter

Sustainability: Driving towards a cleaner future



FROM DEDICATED FLEET TO NETWORK TRANSPORTATION TO OMNICHANNEL FULFILLMENT—WE DO IT ALL AND WE DO IT WELL

Whatever your challenge, we will put in the work and create the most efficient and cost-effective solution for you. With some of the best people in the industry, investment in quality assets and technology, and the highest level of service—we deliver. Why ITS? Because we care.

TRANSPORTATION SERVICES

Led by an experienced team that truly cares about your business, we provide dedicated/expedited truckload, intermodal and complete transportation management solutions with one of the newest asset-based fleets in the industry and an extensive network of nationwide carriers.

- Dedicated/Network linehaul, pool distribution & private fleet enhancement or replacement
- Safety first culture
- ETA predictability & load visibility platform
- Dry van, temp-controlled & open deck/oversize
- Trailer pool & expedited/teams
- Best-in-class carrier qualifications

DISTRIBUTION SERVICES

With AIB certified food grade facilities, leading technology, real-time inventory status and remarkable flexibility—we can develop customized solutions to meet

and exceed your supply chain needs. Our strategic locations offer lower costs and next-day ground service to every major city in the Western United States.

- 1,000,000+ sq. ft. of distribution and fulfillment space
- Superior rating by AIB International
- Omnichannel: eCommerce fulfillment, retail, B2B & B2C
- Cloud-based order & inventory monitoring
- Flexible storage options: pallet rack, flow rack, bulk storage, etc.
- Pick/pack, kitting & assembly, subscription box, reverse logistics
- Quality assurance & value-added services

DRAYAGE AND INTERMODAL SERVICES

We deliver exceptional port and rail drayage services across North America, efficiently empowering your entire supply chain.

- Port & rail drayage
- Door-to-door & ramp-to-ramp intermodal rail
- Cross dock/transload
- Superior accessorial, container & cost management
- Strategic, secure yard locations

WHY ITS LOGISTICS?

We are proud of our company culture and values, and our vision is to improve the quality of life by delivering excellence in everything we do. Let us find a creative logistics solution for your supply chain needs today.



Kenco

2001 Riverside Drive • Chattanooga, TN 37406
1-800-758-3289 • kencogroup.com



Denis Reilly
President & CEO

“What I like about Kenco is that you are big enough to handle our business and everything we throw at you, but you are small enough that we are important to you.”

– Customer Testimonial

Kenco is the largest woman-owned third-party logistics (3PL) company in the United States. We provide integrated logistics solutions that include distribution and eCommerce fulfillment, comprehensive transportation management services, material handling equipment solutions, engineering and innovative consulting, and information technology - all engineered for operational excellence.

For over 70 years, we’ve built customer relationships that span decades. Privately held and financially strong, we take our corporate responsibility seriously by engaging in ethical, honest, and sustainable business practices. Our agility, dedication to customers, and data-driven approach ensure we provide our customers with real solutions and real results.

Expertise in Core Vertical Markets

Kenco serves customers across a wide range of sizes, types, and channels, from industrial and durable and fast moving consumer goods to health and personal care. With decades of experience serving these markets, Kenco has a clear understanding of the “pain points” and unique operational requirements of each sector, empowering our customers to excel in their respective industry segments.

Leading with Innovation

Since we signed our first public warehousing contract in 1950, Kenco has been a pioneer in researching, developing, and deploying technologies that drive results. As the creator of the Kenco Innovation Labs, an industry leading program to test new technologies, the company continues to help customers choose not just the latest offerings but the best technologies for their specific supply chain needs.



In 2019, we expanded the Kenco Innovation Labs to include a research facility in 10,000 square feet of space in a working warehouse. Within the first year, our team of specialists identified \$5 million in savings for customers through a wide variety of solutions. This ability to evaluate products in the environments in which they will be used continues to empower us to better meet the needs of our customers.

Our Associates Are Our Foundation

At Kenco, our greatest and most valued asset is our associates. Their commitment and dedication have earned positive reviews from customers, especially during this challenging past year. We’ll only continue to maintain these strict standards within our operations to protect the wellbeing of our team members while ensuring business continuity for our customers.

Looking Forward—Together

In the coming months, Kenco will introduce new data-driven products to enhance every service we offer—including a transportation management system designed to benefit customers of all sizes. We look forward to continued collaboration and innovation as we begin our next 70 years of operation.



Lily Transportation Corp.

145 Rosemary Street • Needham, MA 02492
800-248-LILY • lily.com



John Simourian II
President & CEO

Our Best Today and Even Better Tomorrow

For over 60 years strong, Lily is proud to continue providing dedicated logistic services throughout North America. Our small beginnings keep us humble, and we stand in gratitude of our continued growth year over year (20% for the past five years). We love the challenge of taking on customers with unique and “specialized” needs, and treat our customers the same as we treat our employees—like family. We press forward, always learning and adapting as we create new efficient solutions in this ever-changing industry.



With headquarters in the Northeast and operations throughout the United States and Canada, Lily Transportation Corp. has engineered and operated dedicated logistics systems since 1958 with pride. We live by the core principle to do “Our Best Today and Even Better Tomorrow!”

What Can We Do For You?

Lily’s Dedicated Logistics Systems are customized to meet our clients’ unique needs, with a focus on anticipating and responding to changes in supply chain demand.

Because we are a Dedicated Contract Carrier, we customize the fleet, operations team and drivers to become your fleet, your team and your drivers. All will look and operate to your specifications, and all will be seamless to your customers.

We are Dedicated to Your Industry and to delivering your product on time, on budget, every time!

Our Customers Can Expect...

On Time Guaranteed, Time-Sensitive Deliveries—Lily’s engineered and operated dedicated logistics systems are coast to coast, regional and multi-stop, and all are built for on time performance.

Highly Efficient Direct Store/Multi-Stop Delivery—Lily can take your LTL

delivered products and build those deliveries into a dedicated delivery system that saves you money.

Flexible Supply Line, Dynamic Routing Services—With on-site management to handle real-time changes to customer deliveries, Software and Management Systems to handle your ever-changing routing needs as well as additional drivers and equipment, Lily will keep your supply line to your customers flexible to help you grow your business with them.

We Have Experience In Your Industry

We serve a wide variety of industries, including grocery, building products, bulk transportation, automotive, medical, retail and food distribution.

We’re In It for the Long Haul

We know that your supply chain must add value to your product and to your customer’s experience. It is our promise to you that we will do Our Best Today and Even Better Tomorrow, continuously improving, to develop a long-lasting partnership that is sure to be a win.



Logistical Labs

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Jonathan Evans
*Managing Director,
Product and Sales*

Collect. Analyze. Take Action.

Our integrated suite of logistics and transportation software products helps you save time, control costs, strengthen margin, and manage your business more confidently.

Logistical Labs builds technology for collecting, analyzing, and deploying big data in the supply chain. With their suite of analytics products, users can make better informed pricing and quoting decisions through data-driven insights and social collaboration. Open API access allows users to easily integrate products into their existing business applications for improved process efficiency.

Logistical Labs was named a Top 100 Logistics IT Provider by *Inbound Logistics* in 2018, 2019, and 2020. To learn more, visit www.logisticallabs.com.

LoadDex: All Rates, All Modes, One Search

Logistical Labs' pricing platform, LoadDex, drastically simplifies pricing and carrier selection across all modes. With a single search, users can compare thousands of rates from all types of transportation providers at once.

BidDex: Host Bids & Manage Your Carrier Network

Logistical Labs' carrier sourcing platform, BidDex, makes RFP management easy by letting users send and receive bids, analyze pricing data, and manage awards in one place.

The BidDex Bid Tracker allows you to source carriers on a load-by-load basis through your own private network. Simply submit a load and let your carriers send their bids. You can then track sourced carriers as they respond and accept or deny their offers from a single screen.

RailDex: Intermodal Pricing Platform

Shippers and logistics providers want a simple platform for intermodal pricing.



RailDex connects your ramp service with your drayage rates so you can offer a comprehensive door-to-door solution with minimal effort and reach new industry verticals that wouldn't otherwise be accessible.

HeavyCarts: Technology for Shipping Heavy or Large E-Commerce Products

Logistical Labs helps shippers get e-commerce products to their customers by connecting them with all types of carriers—parcel, non-parcel, less-than-truckload, truckload, brokerage, and more—to find the most competitive shipping rate at the point of sale.

API Connectivity

Integrate our products with your existing business systems and logistics tools through SQL, FTP, API, screen scrape, or iFrame products we're already integrating with.

LOGISTICAL LABS



Logistics Plus Inc.

Corporate HQ: 1406 Peach Street • Erie, PA 16501
1.866.LOG.PLUS • contactus@logisticsplus.com • logisticsplus.com



Jim Berlin
Founder & CEO

Our Solutions

- LTL & Truckload Freight Brokerage
- International Air & Ocean Freight Forwarding
- Expedited Freight & Air Cargo Charters
- Warehousing, Distribution & Fulfillment
- Customs Brokerage & Global Trade Compliance
- Importer/Exporter of Record (IOR & EOR)
- Project Cargo, Heavy-Lift & Break Bulk
- Business Intelligence & Global Control Towers
- Dedicated 3½PL & 4PL Solutions



Global. Integrated. Logistics.

Logistics Plus Inc. (LP) is a *21st Century Logistics Company*™ and a leading worldwide provider of transportation, warehousing, fulfillment, global logistics, business intelligence, technology, and supply chain solutions. LP was founded 25 years ago in Erie, PA, by local entrepreneur Jim Berlin. Today, LP has annual global sales of over \$300M and nearly 600 employees located in 28 countries worldwide. LP is consistently recognized as one of the fastest-growing privately-owned transportation and logistics companies, a top 3PL, a top freight brokerage and warehousing provider, a leading project cargo manager, and a great place to work. With our trademark *Passion for Excellence*™, our global employees put the 'plus' in **logistics** by doing the big things properly, plus the countless little things, that ensure complete customer satisfaction and success.

manufacturing; startups; retail and wholesale; and many others. LP offers a breadth of simple, reliable, and affordable services. Working as your 3PL, 3½PL, or 4PL partner, we're the company that handles supply chain challenges from start-to-finish by doing what other logistics companies can't or won't do. We're small enough to be agile and responsive to your needs, yet large enough to have a network of solutions that span your entire supply chain.

A Global Network of Resources

The Logistics Plus® network includes offices, warehouses, and agents located in Erie, PA; Akron, OH; Buffalo, NY; Chicago, IL; Chino, CA; Cleveland, OH; Dallas, TX; Dayton, NJ; Des Moines, IA; Detroit, MI; Fort Worth, TX; Haslet, TX; Houston, TX; Laredo, TX; Lexington, NC; Los Angeles, CA; Melbourne, FL; Nashville, TN; New York, NY; Olean, NY; San Francisco, CA; Australia; Bahrain; Belgium; Canada; China; Colombia; Czech Republic; Egypt; France; Germany; India; Indonesia; Japan; Kazakhstan; Kenya; Libya; Mexico; Netherlands; Poland; Saudi Arabia; Taiwan; Turkey; UAE; Uganda; Ukraine; and United Kingdom, with additional agents around the world.

3PL, 3½PL and 4PL Solutions

GE Transportation (now Wabtec Corp.) was our very first partner in 1996. Today they top a list of loyal customers that span many industries, including automotive; aerospace and aviation; chemicals and refining; consumer products; energy and solar; furniture and fixtures; government and defense; pharma and healthcare;



The Logistix Company

376 Dry Bridge Road • North Kingstown, RI 02852
401-560-0660 • thelogistixco.com



Joe Hassenfratz
*Sales and Marketing
Manager*

At The Logistix Company we pride ourselves on providing the highest level of customer service. Through our certified fleet of carriers and utilization of the latest communication technology, we can offer a complete suite of cost-saving freight solutions.



The Logistix Company has decades of experience within the logistics field, enabling us to build a dedicated network of asset partners servicing the transport of freight across the nation and around the globe. Our carriers are insured, experienced, and are held to the highest safety standards. TLC's fleet of carriers enables us to provide our customers with the resources to deliver freight where and when it is needed in a safe, efficient, and cost-effective manner. We make every effort to find our customers the best price possible for every shipment, big or small.

The Logistix Company's staff are experts in the highest industry standards. We have implemented environmentally conscious practices within our company to reduce our global footprint. Our intermodal transportation services can be an effective, sustainable method of shipping freight, and TLC's professionals make the various transitions from road, to rail, and back to road seamless. TLC also invests in the latest technology in order to provide fast, accurate, and cost-effective service.

The Logistix Company offers flexible options for every shipping need, from a single shipment, to your entire supply chain. Our expertise ranges from liquid and dry bulk freight, to LTL logistics, and even to warehouse management. We

provide temperature-controlled shipping options, HAZMAT certified carriers, and consolidation. From documentation to constant communication, our customers quickly learn that the dedicated TLC professionals are available with continual support for all shipments. When we take charge of your shipping needs you can rest easy knowing our focus is on your shipments from pickup to delivery.

OUR SERVICES:

- Truckload Dry Van/Flatbed
- Less than Truckload
- Warehousing and Distribution
- Worldwide Small Packaging
- Liquid and Dry Bulk
- ISO Containers
- Intermodal
- Bulk Liquid and Dry Railcars
- Ocean Freight
- 20'-40' containers
- International Services



Lynden

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Jim Jansen
Chairman

At Lynden, our job is to deliver innovative transportation solutions to our customers.

Lynden began with a clear mission: put the customer first, deliver quality, and be the best at what you do. Today, Lynden's service area has grown to include Alaska, Washington, Western Canada, and Hawaii, with additional service extending throughout the United States and internationally, via land, sea and air. Our mission remains the same. Complex transportation problems can be solved in the hands of the right people, with the right tools and the right experience.



Over land, on the water, in the air—or in any combination—Lynden has been helping customers solve transportation problems for over a century. Operating in such challenging areas as Alaska, Western Canada, the South Pacific and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries including oil and gas, mining, construction, retail, seafood and manufacturing.

Lynden is a family of transportation companies with the combined capabilities of truckload and less-than-truckload transportation, scheduled and charter barges, intermodal bulk chemical hauls, scheduled and chartered air freighters, domestic and international forwarding and customs services, sanitary bulk commodities hauling, and multi-modal logistics.

The Lynden family of companies delivers a completely integrated freight

transportation package. Our people have the knowledge to quickly respond and solve your multi-modal transportation problems. From origin to destination, over any terrain, managing freight movement, as well as the flow of information, Lynden provides innovative solutions to meet your unique needs, keeping you in control while providing you with services no other company can match.

Lynden was founded on principles of integrity and quality. Its environmental commitment is based on a common-sense desire to be efficient and to do things right. Its culture of innovation and efficiency is completely in harmony with its commitment to protect the environment. Lynden's people, equipment, processes and technology are focused on the efficient use of resources and sustainable operations.

Proudly serving Alaska for more than 65 years.



MagicLogic Optimization Inc.

422 Richards Street, Suite 170 • Vancouver, BC • V6B 2Z4 • Canada
Phone: +1206 274 6248 • Fax: +1206 274 6238 • info@magiclogic.com • magiclogic.com



Tim Smith
Owner & CEO

MagicLogic was formed with a vision of supplying the best and most complete logistics solutions for load planning. Our powerful algorithms handle even the most challenging loads, and our R&D team is continuously working on providing even better results and adaptations for our customers.

Each day, many companies worldwide rely on our software to efficiently and safely ship their products and cannot afford downtime. Over the past twenty-five years, we have grown an enviable reputation for providing reliable products and an aftercare service second to none. Our ability to adjust and adapt to our customers' needs sets us apart from our competitors.

Since its inception in 1995, MagicLogic® has become an industry leader in the world of Load Planning software. All software is developed in house and is the result of continuous, intensive research and development. After more than two decades, our software continues to leverage the most versatile and powerful algorithms, providing optimum results while meeting the most complex, stringent business rules and requirements. Any aspect of MagicLogic software is customizable; we have met many of our customers' specific requirements that cannot be accommodated with off-the-shelf products—yet all software is compatible with multiple industry-standard APIs and file types.

Our products include Cube-IQ® interactive load planning software for web and desktop, and BlackBox® for fully integrated high-speed Cartonization and complex Mixed Case Palletization.

Cube-IQ®

Cube-IQ is our state-of-the-art load optimization software. We load more and cover more operational requirements than any other software. MagicLogic offers versions that are industry-specific, following different implementation scenarios.

The software includes a built-in database engine that is shareable with multiple users and comes with full import-export capabilities, using Excel, CSV, JSON, or XML files. Cube-IQ gives you optimal volume/weight utilization, optimizing loading items into one or more containers. We can select the right sized containers for your load.

Cube-IQ has a graphical user interface with point and click and drag and drop functionality, so you can edit loads in real-time using the fully interactive load editing module. Once optimized, load planners receive clear 3D diagram-based instructions. Because Cube-IQ can cope with complex shapes, we load more items every time.



BlackBox®

Our BlackBox optimizer is a Windows service and is easy-to-integrate. Its key applications are Cartonization, selecting the right box for orders in eFulfillment, order after order, and Mixed Palletization for either Pack Station or Robotics.

BlackBox is load planning distilled to its purest form, ensuring the system is an integrator's dream. MagicLogic's state of the art loading algorithm is condensed into a plug-in module compatible with any WMS/ERP system on the market.

Our proprietary algorithm is central to BlackBox and is the culmination of many years of intensive research and experience in the field of Combinational Optimization. BlackBox is widely acknowledged as the best on the market and is frequently imitated but never bettered. It is built into the software provided by many Tier 1 logistics service providers. By utilizing true 3D placement of every item, our software delivers an optimal solution.

cube-iq
blackbox
magiclogic

Mainfreight

1450 Glenn Curtiss St. • Carson, CA 90746
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John Hepworth
CEO

“Across Mainfreight’s global network our customer sits at the very center of our business. Striving to consistently improve our quality and service, we believe the best people to make decisions are those right on the spot.

Every one of us has the autonomy to think like we own the business and make educated decisions quickly. Through being closer to our customers both geographically and in our decision making, we become a faster and more valuable business.

Autonomous decision-making also creates a generation of decisive future leaders with a hands-on understanding of both our business and those of our customers.”



With a global footprint of over 260 branches in 24 countries, our extensive network looks to offer customized supply chain solutions for our customers. We aim to delight our customers by building strong partnerships and an understanding of their unique needs.

Backed by world-class technologies, our global business is built on two unshakable beliefs that we live by on any given day:

- The only way to keep ahead of our competitors is by the superior performance of our people
- The only measure of superior performance is how the customer perceives it

Transport

Whether you’re sending goods next door, across the country or transborder to our neighbors, Mainfreight’s comprehensive network lets us find the best match for time, cost and performance to meet your needs, by road, rail, sea or air. As a SmartWay Certified Carrier, we control your freight from door to door, ensuring a constantly high standard of service while being responsible to our environment. The EPA has recognized our dedicated linehaul and extensive branch network for its commitment to deliver to destinations in the US, Canada & Mexico utilizing commercially available fuel saving strategies and emission

reduction technologies to help protect the communities we service today and improve air quality for future generations.

Air & Ocean

As an IATA-accredited cargo agent, Mainfreight Air and Ocean offer a total international shipping import and export service via sea or air and a full documentation service for customs clearance including MPI Biosecurity. Worldwide freight is made simple with our cost-effective core services and specialist teams providing quality service, superior information and a custom-made solution giving you the reach to take your business to the world.

Warehousing

Mainfreight Warehousing provides specialist warehousing and omni-channel distribution solutions across all industry sectors and commodities. Whether you have one pallet or thousands of pallets, Mainfreight provides an integrated supply chain logistics solution for you. We have built a regional warehousing solution that optimizes end customer distribution across the U.S. including multi-site solutions with the focus on finding the best answer for the challenges of our customers.



Mantis

1000 Parkwood Circle, Ste 900 • Atlanta, GA 30339
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**Yiannis
Panagiotopoulos**
CEO

Mission:

To provide customers with the best-in-class “self-serve” and scalable Warehouse Management/Optimization/Automation platform.



Mantis, established in 1996, is a leading international WMS/logistics software and solutions vendor with European origins. With 9 offices and many qualified partners, Mantis is present in 30+ countries in Europe, North America, Middle East and Asia.

Mantis' flagship Logistics Vision Suite (LVS) is the only highly scalable “self-serve” WMS/logistics platform in the world. Its design represents a great leap in WMS/logistics technology, offering outstanding adaptability and flexibility. It enables Mantis customers with complex warehouse operations to easily configure, deploy and support the WMS by themselves, thus responding fast to their continuously evolving needs while at the same time enjoying an unbeatable low multi-year TCO. It is also the WMS platform of choice for integrators because it allows them to perform fast and smooth implementations and painless ongoing support and thus to drastically increase their overall profitability.

More than 550 enterprises, many of them leading multinationals, representing all major industries (3PL, Retail, Distribution/Wholesale & Manufacturing) and selling channels (traditional & multichannel e-commerce) rely on LVS to run and optimize their logistics operations. LVS customers spread across many vertical markets, such as Consumer Products, Food & Beverage, Fashion, Pharmaceuticals & Medical, Cosmetics, Grocery Chains,

Appliances & Electronics, Building Materials, Tobacco, Spare Parts & Accessories, Chemicals, Books & Office Supplies, Furniture, etc.

LVS goes well beyond the management of the warehouse, offering extended capabilities such as value-added services, kitting, light manufacturing, dock & gate management, logistics customer/partner service, parcel management, centralized control of local and remote warehouses, advanced slotting, labor management, inventory optimization, flexible 3PL billing, comprehensive traceability management and powerful warehouse analytics.

Mantis complements LVS with flexible and affordable warehouse automation systems consisting of a smart combination of proven competitively priced technologies (Voice Picking, Pick-to-Light, Put Walls, Smart Pick Carts, Smart Glasses, RFID, etc.) that have been tightly integrated with LVS using advanced proprietary technology that significantly enhances automation's overall performance, while at the same time minimizes costs due to the elimination of any relevant 3rd party control software.

Finally, in order to strengthen its warehouse optimization offering as well as its presence in North America, Mantis acquired in 2018, Insight GT, Inc., a leading international Slotting and Warehouse Optimization software solutions vendor headquartered in Toronto, Canada.



Maryland Port Administration

401 East Pratt Street • Baltimore, MD 21202
800-638-7519 • 410-385-4400 • marylandports.com



William P. Doyle
Executive Director

Mission Statement:

The Maryland Port Administration (MPA) oversees and manages the six public marine terminals of the Port of Baltimore. It is tasked to stimulate the flow of waterborne commerce through the State of Maryland in a manner that provides economic benefit to Maryland citizens. The MPA directly markets, promotes, and facilitates trade through the Port of Baltimore while supporting both public and private Port facilities. The Port of Baltimore annually generates about 15,300 direct jobs, and nearly 140,000 jobs in Maryland are linked to the POB.



More than 300 years removed from its beginning as a colonial hub for the tobacco trade, then as a budding shipbuilding mecca famous for its "Baltimore Clipper," today the Port of Baltimore is widely celebrated for its specialization in moving a 20th century conveyance—the automobile. Among the most diversified cargo gateways in the United States, it is a leading port of departure and arrival for automobiles and roll on/roll off (ro/ro) cargo, while also laying claim as one of the top destinations for imported forest products, paper, gypsum, sugar, and iron ore.

Centrally located on the Atlantic Coast, the Port of Baltimore, which is managed by the Maryland Port Administration (MPA), is the farthest inland port in the United States with a 50-foot deep channel. Baltimore now has a 50-foot deep container berth that is ready to welcome the world's largest ships today.

It is also the closest Atlantic port to major Midwestern population and manufacturing centers and a day's reach from one-third of all U.S. households. Steel manufacturers in Pittsburgh, furniture makers in North Carolina, and consumers in Boston are all served in less than 24 hours from the port.

In terms of transportation, the Port of Baltimore is located adjacent to the East Coast's primary north-south corridor, I-95, proximate to east-west running I-70, and is served by both CSX and Norfolk Southern railroads.

One of the unique aspects of the port's trade is the diversity of cargo moving through its facilities. With a balanced portfolio of automobiles, forest and paper products, ro/ro, and container shipments, the port hosts a variety of global shippers and is less vulnerable to precipitous drops in niche trades.

The MPA operates six public terminals:

- 1. Dundalk Marine Terminal (570 acres):** Containers, breakbulk, wood pulp, ro/ro, autos, project cargo, farm and construction equipment
- 2. Fairfield Automobile Terminals (104 acres):** Automobiles
- 3. The Intermodal Container Transfer Facility (84 acres):** International and domestic containers
- 4. North Locust Point Marine Terminal (90 acres):** Wood pulp, lumber, latex, steel, paper, and containers
- 5. Seagirt Marine Terminal (284 acres):** Containers
- 6. South Locust Point Marine Terminal (79 acres):** Forest products



MD Logistics

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Mark Sell

President and Co-Founder

Our Mission:

At MD Logistics, our mission is to support our team of leaders, dedicated to each other and our customers, in order to remain fast and flexible while providing custom supply chain solutions in a high quality environment, on time, every time.

MD Logistics is a third party logistics company specializing in customized supply chain solutions. Our vertical markets include Life Sciences and Pharmaceuticals, Retail and Consumer Goods, as well as Transportation Services. In addition to cold chain and foreign trade warehousing, our services range from packaging, fulfillment and distribution to global freight forwarding and freight management.

Located in Plainfield, Indiana, and Reno, Nevada, our combined facilities include state of the art Pharmaceutical and Retail distribution space.

Life Sciences and Pharmaceuticals

MD Logistics designs customized supply-chain solutions for global distribution of trade, sample and clinical specialty products. Our facilities are fully licensed and accredited, maintaining cGMP and VAWD standards, enabling us to provide compliant cold chain storage for finished and WIP products. We deliver these standards through the utilization of Red Prairie WMS and strategically located state of the art facilities. We offer full integration with our customers' ERP software and support electronic data interchange for order management and reporting. Most critical to operational success, our dedicated and experienced pharmaceutical team stands behind our services to ensure the utmost product quality and maximum customer satisfaction.

Retail & Omni-Channel Logistics

MD Logistics client shared facilities manage high-volume, high-value, market-driven, retail-sensitive products for industries



MD LOGISTICS

Customized Supply Chain Solutions

that expect maximum performance and flexible infrastructure. We handle B2B and e-commerce distribution, supporting the top 100 retailers in the country. Our tier one WMS fully integrates with our customers' ERP software and supports electronic data interchange for order management and reporting. By combining a wide array of custom solutions, the MDL team manages your supply chain from start to finish.

Transportation Services

Beyond traditional warehousing and distribution services, MD Logistics offers freight management, global freight forwarding and brokerage services. Our Indianapolis and Reno facilities are both located near International airports and within a day's drive of over 80% of the US population. We are strategically positioned to offer customers a range of all-inclusive transportation services and optimize their transportation budgets.



Merit Logistics

614-557-3797 • MeritLogistics.com



We assist our clients in achieving success by providing superior logistics services at the lowest possible cost while providing our associates opportunities to grow, succeed, and prosper.

Trusted, Reliable, Expert Warehouse Services

- Unloading / Loading
- Sorting / Hauling / Put Away
- Order Selection
- Palletizing / Stackdown
- Sanitation
- Contingency Labor
- Meritrax Security
- Special Project +

We Earn It!

Call Merit Logistics today!
614-557-3797
www.MeritLogistics.com

When you partner with Merit Logistics, you get more than a 3PL warehouse services provider. You get a business partner—one committed to personalized service and helping you achieve the maximum throughput and profitability for your distribution center (DC).

We strive to make each client feel like they are our only customer, while also maintaining a national footprint to service their warehouse requirements anywhere in the USA.

Merit Logistics Promises Each Client...

The Highest Quality Services at the Best Possible Price

This is due to Merit's:

- Principles and processes learned from decades of logistics industry leadership
- State-of-the art technologies and reporting designed to optimize DC efficiencies and minimize detention fees
- Advanced skills training and performance incentive programs for our associates
- Daily end-of-shift reporting and monthly client satisfaction surveys that are viewed by our entire executive team

Unmatched Reliability & Consistency

- Expert on-site management, focused on your specific KPIs and requirements
- Industry-leading employee retention
- A strong track record for safety
- An agile business model and mobile workforce

Unparalleled Customer Care & Responsiveness

- Top-down values instilled to provide our clients with the most responsive, effective services available
- Direct executive involvement and oversight
- Immediate escalation of issues



Comprehensive Warehouse Services

Merit Logistics provides freight handling / unloading expertise and any level of service required for distribution centers of all sizes, including some of the nation's largest grocery and retail chains.

Inbound

- Unloading
- Sortation and Segregation
- Receiving
- Freight Hauling / Put Away
- Salvage / Bailing

Outbound

- Order Selection (Vocollect option)
- Palletizing
- Label Pick
- RFI Selection
- Pick to Light / Pick Sheets
- Put to Light
- Stackdown
- Auditing
- Loading

Warehouse Sanitation

- Facility Maintenance
- General Offices Cleaning

Contingency Labor

- Labor Disruptions
- Emergency Support

Special Project +

MHI

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John Paxton
CEO

MHI is an international trade association that has represented the material handling, logistics and supply chain industry since 1945. MHI works to deliver the latest knowledge, the strongest connections, powerful industry leadership, and the best market access for manufacturing and supply chain professionals. Our 800+ members and 17 Industry Groups, including WERC, power research and solution sourcing to drive the innovations you can see at our world-class ProMat and MODEX events.

ProMatDX

MHI is harnessing all the power of the MHI and ProMat brands to continue to deliver value digitally in 2021. We will utilize the most advanced technologies to connect all our audiences through the ProMat Digital Experience—ProMatDX.

The goal of ProMatDX is to bring the industry together to collaborate and develop into a community that shares knowledge and addresses current and future manufacturing and supply chain issues.

ProMatDX will continue to provide ProMat's unrivaled manufacturing and supply chain solution sourcing with AI-based matchmaking, live video meetings, product demos and live chat. Educational opportunities to connect will include streamed seminar and keynote sessions as well as daily wrap-ups, news, and video interviews from the event.

Digital Experiences. Outstanding Results.

ProMatDX will provide one digital platform where the industry can come together to find manufacturing and supply chain solutions, problem-solve, connect with their peers and learn the latest trends and innovations that will take their supply chains to the next level of agility and resiliency.

Get Connected. Get Educated.

This exciting, new digital experience will also offer cutting-edge streamed educational opportunities, including keynote and seminar sessions on leading trends and technologies from industry thought leaders.

ProMatDX combines the power of ProMat's exclusive audience of manufacturing and supply chain buyers with the latest digital event and lead matchmaking technology. ProMatDX



will offer a variety of educational and networking opportunities for manufacturing and supply chain professionals, including:

- Keynotes
- Educational Seminar Sessions
- Product Demos
- Women in the Supply Chain Industry Forum
- MHI Young Professionals Networking Event

Power Up Your Opportunities.

For 75 years, MHI has been here to serve this industry and to bring it together. While the ongoing pandemic makes it impossible to hold ProMat in person in 2021, connecting the industry and delivering value to our audiences is still our top priority. ProMatDX, held April 12-16, 2021 is where you'll find the solutions needed to create future opportunities. Register today at promatshow.com.



Mitco Global Logistics

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Kevin May
CEO/President

MITCO GLOBAL LOGISTICS

A full-service asset-based third-party logistics company specializing in Gateway Solutions. For over 30 years, Mitco has helped companies bring their products to market.

MITCO MISSION

Provide adaptive and scalable global supply chain solutions designed to customers' needs by investing in people and technology.

MITCO VALUE

Mitco is a Managed Supply Chain Solutions company delivering through dynamic technology, commitment to customer value, and improved financial results.

THE MITCO SOLUTION

The Challenges

Consumer behavior and the ever-changing retail landscape require supply chains to evolve. Continuously balancing the needs of the customer with services and cost controls.

Speed to market and inventory visibility throughout the supply chain are critical through all logistics phases.

Demand is not static; flexibility and adaptability to balance speed and cost are a must. Static, one-size-fits-all solutions no longer meet today's requirements.

Why Mitco

Mitco delivers Managed Global Solutions designed to proactively manage all segments of your supply chain, developed to your requirements and KPIs. We integrate solutions across all segments of the supply chain, providing a single-source solution.

At the core of Mitco solutions: People, Technology, and Assets. Investing in these critical components, providing 3PL solutions specific to your business, to meet your customer demand and service levels.

The Mitco Solution

Beginning at origin of goods, domestic, or offshore, we integrate your inbound data into our systems. Programmatic tracking provides updates and the ability to react proactively.

Regional DCs provide crossdock, warehousing, and fulfillment for both B2B and B2C markets. We manage at PO, item level, and shipment level. Our interactive systems allow for in-transit changes supporting customer demand changes.

Final mile: Our team is focused on meeting "must deliver by" dates and retail compliance. Our TMS provides the ability to evaluate cost and speed to align with customers' requirements. Monitoring shipments in transit, we react and communicate when issues arise...not when you call to ask why it didn't deliver on time!



The Results



Visibility. On the water, on a truck, through our warehouse or delivery to your door, visibility to inventory from a single portal. Tracking by Item, PO, or Shipment ID.



Operational Performance. Assets, expertise and documented SLAs with real-time performance reporting provides the ability to measure results on demand.



Flexibility. Our interactive portal and dedicated customer service allow you to prioritize items, POs, and shipments through all segments of the supply chain.



Costs. By moving to a single-source solution and with services designed to your needs, the Mitco solution can deliver a lower Total Landed Cost.

Mitco operates as an extension of your company. Our success is only defined by your success. Delivering efficiencies, lower cost to serve, and customer satisfaction is our priority.

CORE SERVICES

DRAYAGE WAREHOUSING FULFILLMENT TRANSLOADING TRANSPORTATION



MPO

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Martin Verwijmeren
CEO

As a supply chain software-as-a-service company, MPO's goal is to empower brands and logistics service providers to consistently deliver on the perfect order (on-time and in-full at the lowest possible cost).

Our philosophy is that businesses shouldn't have to compromise on customer service to control costs, or vice versa. MPO's flexible and optimizing cloud platform makes it possible to innovate and consistently deliver an outstanding customer experience while maximizing operational excellence, which is no easy feat in today's climate.

Platform Capabilities

- Control Tower & Visibility
- Transportation Management
- Omni-Channel Order Fulfillment
- Returns & Aftermarket Management



MPO offers a unified cloud platform for supply chain orchestration. The platform is uniquely able to factor broad considerations and constraints—such as order requirements, inventory visibility, carrier capabilities, and service level options across inbound, outbound, and reverse and aftermarket flows—to ensure every customer order is optimally planned and executed—for maximal satisfaction at the lowest possible costs.

In addition to real-time analytics and alerts, the platform enables companies to act instantly and upon the latest, available network data to mitigate impact from disruption.

Bold projects don't have to cost millions or take years to implement. MPO's neutral, cloud-based technology supports real-time integration and can typically begin enacting transformative change within weeks. Most companies can expect to generate value within 2- to 4-month increments, with breakeven in less than one year.

What Makes MPO's Order & Logistics Management Capabilities So Unique?

While most transportation management solutions handle operations from a shipment perspective (shipment-centric), MPO offers the world's only order-centric TMS.

The MPO platform can consume a raw order of any type (Purchase Order, Sales Order, Return)—making integration with

order capture systems easy—and is also uniquely able to decompose orders into one or many shipments, so that every routing and carrier decision is fully optimized to be as efficient and cost-effective as possible. MPO goes beyond just transportation by enabling planning and coordination with WMS systems to enable a seamless fulfillment process.

This unique order-centric structure allows for superior rush and expedite order management. Since there is no batching or special processing, users have the power to aggregate and optimize flows as needed, until the last possible moment.

The Order-Centric structure also provides unprecedented processing speeds and reduces latency in status updates to facilitate the quickest responses and most timely event management.

Having no mode, leg, or geographic limit makes the MPO platform one of the most flexible solutions on the market, empowering its users to configure complex omni-channel order flows (as well as returns) across all B2B, B2C, and D2C parties, as well as easily modify and add new flows to accommodate evolving business needs.

The robust rate and service agreement structure provides pinpoint accuracy and detailed cost allocation. MPO captures not only transport costs, but all logistics costs including handling, customs, duties, and warehousing.



New York Fulfillment

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Multi-channel Selling Made Easy — And Free!

At New York Fulfillment we know how expensive multichannel selling can be. It seems everyone wants a slice of your hard-earned revenue. Not us.

Let us fulfill your orders and you can sell on as many channels as you like with our multi-channel platform—for free. That means:

- No setup fees
- No subscription costs
- No transaction charges

Order Fulfillment Services for any Budget

- E-commerce Order Fulfillment
- B2B Order Fulfillment
- Kitting & Sorting
- Bagging & Labeling
- Gift & Promotions
- Return Processing
- Inventory Storage



New York Fulfillment makes order fulfillment easy! No complicated systems, no confusing pricing tiers, no nickel and diming for every extra item or service. Ship your inventory to us, and we'll take care of it from there.

Leave the Shipping to Us

We've made it our business to be experts in the art of helping your small business grow. We fulfill for companies that ship more than 100 orders a day, and those that ship less than 10 a month. We'll take care of the shipping side of your business so that you can concentrate on getting new customers and promoting your products.

Consider the Cost Savings

At a minimum, you'll save hundreds of dollars every month by taking advantage of our services. Consider the cost of warehouse space, boxes, tape, packaging materials, and commercial utilities, not to mention employees and the assorted expenses that come with hiring and training them. No one takes the day off, no sick days, no injuries or workman's comp, no paying employees for Facebook or Twitter time. Order fulfillment is an efficient use of your money because you pay for exactly what is done, no more.

NYF will take as much pride in your business as you do. Our double-check pulling system ensures that your orders are filled correctly the first time. Warehouse staff will pull your order and then it will be checked by the warehouse manager on duty before being packed and shipped. If this system fails for any reason, we'll fix it immediately, at our expense.

Fulfillment

We offer a complete e-commerce fulfillment solution, including:

- Pick, pack & dispatch
- Inclusive multi-channel integration
- Returns handling

Warehousing

We offer a range of storage solutions from our current facility in the South West. Leverage our high-volume accounts with these providers to offer your customers competitive rates and an efficient service.

Distribution

Through our distribution partners, we are able to offer a full range of national and international distribution. We can store your products in any combination of bulk, racking and bins for the best compromise between space saving and picking efficiency.

We Also Offer

- Freight Forwarding
- Domestic & International
- Freight & Parcel
- Air & Ocean
- Less Than Truckload
- LTL Visibility Through Technology
- Technology & Truckload Services

Contact New York Fulfillment today to learn how we make order fulfillment easy.



North Carolina State Ports Authority

2202 Burnett Boulevard • P.O. Box 9002 • Wilmington, NC 28402
Customer Service: 800-334-0682 • customerservice@ncports.com • ncports.com



Brian E. Clark
Executive Director

Mission Statement

The mission of the North Carolina State Ports Authority is to enhance the economy of the State of North Carolina. The Ports Authority will be managed like a business, focused on the requirements of its customers. North Carolina's Ports are recognized for self-sustaining operations, environmental stewardship, highly efficient workforce, satisfied customers, and modern, well-maintained facilities and equipment.



North Carolina Ports has convenient locations in Wilmington and Morehead City, plus an inland port in Charlotte. Our customer-focused approach offers shippers excellent port communication and customized service.

If you're not yet working with NC Ports, here are our top 10 reasons why you should consider doing so:

1. We're **customer-focused**, with limited red tape that aids our commitment to helping new customers transition.
2. We've got **less congestion** than other East Coast ports. Some may be larger, but they're often MUCH busier.
3. We're equipped to handle **ultra-large container vessels**, thanks to our harbor enhancements and three neo-Panamax container cranes.
4. Our turnaround times are quicker than those of other ports. In fact, we've got the **fastest turn times on the East Coast**.
5. Our carriers do business **all over the world**, calling on ports in Asia, Europe, Africa and Latin America.
6. Our rates are very competitive, usually resulting in **cost savings** for you (and your customers, if that applies).
7. We've got **room for growth** that will be tailored to the specific needs of our customers. If you need an accommodation, there's a good chance we can make it happen.
8. Our strategic plan is business-friendly, with the goal of **providing you with a competitive advantage and more opportunity for profitability**. We want to be your best business decision.
9. Our **infrastructure investment** is designed to meet future industry needs, with some projects already done and more on the way. Recently, we added a **new, 101,000-square-foot, on-terminal cold storage facility** that can accommodate more customers than ever. And we're working to double the annual throughput capacity at the Port of Wilmington to more than one million TEUs and triple our on-terminal refrigerated container capacity.
10. **Our location is second to none**, with easy access to interstate highways and major railroads. North Carolina's ports are within 700 miles of 70 percent of the U.S. industrial base.

To learn more about how your business can benefit by working with North Carolina Ports, visit ncports.com.



The Northwest Seaport Alliance

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John Wolfe

Chief Executive Officer

About The Northwest Seaport Alliance

The ports of Seattle and Tacoma (Washington State, USA) unified management of their marine cargo facilities in August 2015.

The alliance is a port development authority governed by the two ports as equal members, with each port acting through its elected commissioners.



The Northwest Seaport Alliance (NWSA) brings together two of the nation's premier harbors to form a single, integrated gateway for marine cargo. Our combined terminal facilities, carriers and ports of call provide unlimited options and flexibility to suit your unique supply chain needs.

We are one of the largest container load centers in North America. Strategically located in the northwest corner of the U.S., we offer shorter transits from Asia, and are the first and last ports of call for many Trans-Pacific liner services. We are also a major gateway to Alaska and Hawaii; more than 80% of trade between Alaska and the lower 48 states moves through our harbors. In addition to containers, we are also a center for bulk, breakbulk and project/heavy-lift cargoes, and automobiles.

Make better connections

Shorter transit times from Asia make The Northwest Seaport Alliance the natural port of choice for time-sensitive container cargo headed to the Midwest, Ohio Valley and the East Coast.

Our on-dock rail, international and domestic rail service options from two Class 1 railroads along with near-terminal transload warehouse facilities offer plenty of options and the flexibility to move cargo how and when you want. Our close proximity to the 2nd largest concentration of warehousing on the U.S. West Coast also makes us an ideal location for warehousing, distribution, and transload operations.

We pride ourselves on being proactive and performance-driven, and put unrelenting focus on delivering operational excellence and best-in-class service for our customers. And our commitment to working hand-in-hand with our supply chain partners to provide cost-effective, innovative shipping solutions is unparalleled. At the end of the day, it's all about helping you, the shipper, get the job done.

Make our competitive advantages yours:



Big Ship Ready



Room to Grow



Hassle-free Connections



Cargo Handling Experts



Best-in-class Customer Service



**THE NORTHWEST
SEAPORT ALLIANCE**

SEATTLE + TACOMA

Nulogy

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Nulogy: Our Differentiator

Get visibility into your outsourced supply chain.

Ensure that you uphold your brand promise and consistently produce at a high quality, all while reducing OTIF risks by tracking order status and reacting quickly to changing supplier capacity.



Nulogy is a leading provider of agile supply chain solutions, serving some of the world's fastest growing and most innovative consumer brands and their external supply chain providers.

Visibility Drives Effective Collaboration

Nulogy's cloud-based platform allows consumer brands and their external suppliers to gain visibility and collaborate more effectively, helping the ecosystem respond with ease and speed to a volatile retail and consumer environment while reducing waste and costs.

As well, global leading logistics providers such as DHL, XPO, CEVA, and K+N leverage Nulogy to optimize their production, labor, and inventory management while providing more responsive and higher-quality service to their brand customers.

Nulogy's platform is implemented in hundreds of contract packaging and manufacturing sites around the world.

CPGs Need Agile and Resilient External Supply Chains

Today's marketplace is increasingly volatile and unpredictable. Many consumer brands rely on their external manufacturing and packaging partners to help bring products to market more quickly and cost-effectively. But many of these supply chain ecosystems lack the ability to collaborate effectively, and are shackled by the limitations of ERPs.

Nulogy illuminates the black box of your external supply chain and enables you to work better and smarter with your external manufacturers and packagers.





Luther M. Brown
Founder & CEO

nVision Global provides configurable technology solutions, enabling shippers around the world to optimize their transportation management and gain access to critical data. From our roots as a North American freight audit & payment provider, we now offer a full suite of logistics services that allows for end-to-end shipment visibility.

We possess more than 25 years of expertise in Freight Audit and Payment, Data Normalization, Claims Processing, Freight Rate Procurement and Management, Spot Quote/Auction Platform and Best in Class Business Intelligence and Analytics, all of which are located within our Impact Transportation Management System.

Customers rely on our modular software solutions to provide the visibility and data that they need to increase efficiencies and reduce overall transportation costs.

While each customer has similar issues, every customer is different! We provide configurable solutions that meet every customer's needs because our solutions are robust enough to address global issues but flexible enough to fit into your environment. Unlike our competitors, we tailor our solution to fit your needs; not the other way around.

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nVision Global Highlights include:

- Global Single Source Solution
- Industry Leading Analytical Tools
- Multi-Lingual Staff
- Process Invoices From Over 198 Countries
- Experts in Processing all Transport Modes
- Six Sigma Methodology

Core Services include:

Global Freight Audit/Payment

- Single Global Platform
- 120 Standard Data Elements Captured
- Utilize Latest Imaging Technology
- Experts in Complex Account Coding
- On-Demand Closings
- Non-Commingled Payments
- Online Exception Management
- Global Support & Services Teams
- Sarbanes-Oxley Compliant
- Automated Match Pay Processing



Transportation Management System (TMS)

- Global Freight Auto Rate and Auto Tender
- Shipment Tracking & Visibility
- Benchmarking
- Vendor Compliance Reporting
- EDI Compatible
- Vendor & PO Integration
- Shipment Creation & Rating
- Shipment Spot Bid & Approval
- Shipment Tender/Booking
- Shipment Visibility

Business Intelligence/Information Management

- Industry Leading Analytics Dashboard
- Global Mapping, Graphing
- Ad-hoc Reporting
- Least Cost Carrier Applications
- Single Source Data Warehouse
- Key Performance Indicator Development

Freight Rate Procurement

- Online Procurement Software that Manages the Entire Procurement Project
- Transport Providers Submit Bids Online

Contract Management

- Online Management Portal
- Rate Approval & Imaging Process
- Rate Expiration Notifications
- Storage of Expired and Current Rates
- Standardized Pricing Templates Available

Claims Management

- Loss & Damage Claims Processing
- Overcharge Claims Processing
- Service Failure Claims Processing
- nVision Global Managed or Self Service (Offered as a Software—SaaS)
- 87% Collection Rate
- Over 40 Years of Combined Experience

Odyssey

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Robert H. Shellman
President and CEO

Innovating Logistics, One Route at a Time

There are lots of ways to get from Point A to Point B, but there's only one optimal way. For your business to maximize its profit, you need to avoid weather disruptions, labor shortages, price increases and countless other inefficiencies.

Odyssey Logistics specializes in complex logistics, creating custom-tailored solutions across multiple transportation modes. Door-to-Done® is not just our commitment to ensure the timing, safety and integrity of your shipment from the moment it leaves your facility all the way through to final delivery, it is our assurance that our world-class logistics experts will manage the entire process, from request to receipt.



RESPONSIBLE CARE®
OUR COMMITMENT TO SUSTAINABILITY



Odyssey's deep expertise, leading technology and extensive network provide clients with best-in-class logistics solutions

Organizations with diverse and complex transportation needs rely on Odyssey's innovative technologies to deliver thorough, high-value logistics strategies. Our clients benefit from expert tailored solutions across multiple transportation modes, backed by the power of our freight network exceeding \$3B globally.

At Odyssey, we have assembled a diverse **portfolio of solutions** that we make available to our clients in multiple ways, including:

Managed Logistics Services: With our experience and vast supplier network, our transportation management services clients know we will strategically manage their logistics operations, from the routine to the most complex and challenging, regardless of cargo size, class or destination.

Intermodal Services: Odyssey is a leader in intermodal metals transportation and is an expert in intermodal ISO tank movement

for products that require special handling including chemicals and food grade liquids. We are the largest independent logistics company in ocean container transportation, servicing all the major ports across the country.

International Services: Our customers rely on our comprehensive knowledge of import and export processes and regulations that enables us to design custom, cost-effective, end-to-end international transportation solutions for any size load.

Specialized Truck Services: From small less-than-truckload (LTL) going a short distance to large truckloads (TL) moving across the country, we find our customers the capacity they need.

Advanced Technology Solutions: Through WIN, we offer a cost-effective transportation management web tool that has a scope that reaches beyond common TMS offerings. Operating through the Odyssey Logistics Global PlatformSM it brings the scale, efficiency and savings of the Odyssey carrier network directly to the client.





Marc Althen
President

Products and Services

- Dedicated Contract Carriage
- Distribution Center Management
- Transportation Management
- Lead Logistics
- Freight Management
- Freight Brokerage



Penske Logistics engineers supply chain and logistics solutions that deliver powerful business results for market-leading companies. Through its design, planning, and execution, Penske gives you the confidence to move forward by boosting efficiency and driving down costs in your supply chain.

Industry-specific expertise

Our experts work with the world's leading companies across industries, from automotive and healthcare to food and beverage and retail. We offer specialized solutions tailored to your operations, production and market demands. Penske Logistics can help you:

- Ensure efficiency within your supply chain using smart technology
- Improve the product development cycle for a successful launch
- Drive dynamic supply chain solutions
- Achieve record savings

Our technical capabilities, depth of experience and practical creativity have been recognized by both our customers and the industries we serve, and our people deliver the results you need to succeed every day.

Innovative thinking

As a recognized industry thought leader, our award-winning teams bring fresh thinking to benefit you and your business. By tapping into our knowledge and know-how,

Penske Logistics

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you can start driving innovation that produces real value.

To keep ourselves and our customers on the cutting edge of industry trends and information, we partner with leading organizations such as the Council of Supply Chain Management Professionals, and sponsor well-respected longitudinal studies from top supply chain researchers at Penn State University.

Global capabilities

Penske Logistics has extensive experience successfully establishing operations in new territories and a proven ability to transfer knowledge across geographies and cultures. With offices in North America, South America, Europe, and Asia, we're committed to serving our customers anywhere, meeting the needs of suppliers, manufacturers and retailers around the globe.

That's how we deliver confidence. Let us show you how our winning strategies can work for you. Call 844-868-0818 or visit us online at penskelogistics.com today.



**Rental
Leasing
Logistics**

Performance Team—A Maersk Company

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Craig Kaplan
CEO

Our focus has always been on building partnerships through leveraging our expertise, human capital, technology, and integrity.



Locations

Los Angeles/Long Beach/
Inland Empire/
Northern California,
New York/New Jersey,
Chesapeake, Chicago,
Dallas-Fort Worth,
Houston, Kansas City,
Louisville, Miami,
Savannah, Seattle,
Shreveport, Vancouver



For over 30 years, Performance Team—A Maersk Company has been a logistics leader in providing retail and manufacturing industries with end-to-end supply chain services. In 2020, PT was acquired by A.P. Moeller-Maersk and joined the world's largest integrated shipping company. Through our North American hub network, more than 14 million square feet of warehouse space in over 46 warehouses, and 500-plus trucks, we process, distribute, and transport goods throughout North America for the world's top retailers and manufacturers. We've worked hard to earn and maintain a reputation as one of the leading e-commerce, distribution, trucking, and consolidation companies in the U.S. Here are a few ways we can help serve you and your customers more efficiently.

E-Commerce Fulfillment & Distribution

Whether e-commerce, omnichannel, reverse logistics, pick-and-pack, transload, or carton-in carton-out, we have distribution solutions to meet your most basic or complex needs. PT has the infrastructure, material handling equipment, information technology, and management expertise to handle any task. We are proficient at adding flex space and human resources to adjust to your seasonal demands. Talk to us about how you can eliminate the need for costly real estate investments, construction and equipment, labor management and technology purchases. As your business expands and requires additional space or more sophisticated solutions, Performance Team will rise to the challenge to not only meet but exceed your strategic distribution needs.

Transportation

Our customers compete in fast-paced retail and manufacturing industries, demanding precise, accurate and informed transportation services. Performance Team—A Maersk Company has the skills and technology to support those time-sensitive requirements. No matter how difficult the mission, from drayage, store delivery, local pick-up, consolidation, and delivery to distribution facilities and stores, PT



is ready to step up to the plate and make a difference for your company.

Supply Chain Consulting

For Performance Team—A Maersk Company, logistics means strategy, execution, and integrity. Our extensive experience in supply chain consulting enables us to analyze your business and devise custom, effective, and flexible solutions to optimize the movement, handling, and distribution of your goods. Our logistics expertise can help you craft robust growth-oriented distribution networks, increasing your return on assets while managing overhead, without losing sight of your goal—giving you and your customers the best service available.

Technology

Performance Team—A Maersk Company utilizes best-in-class technology to streamline and improve the movement and visibility of your products. Our WMS and TMS systems are integrated with our customers' ERP systems and provide real-time updates and reporting, 24/7. This is handled through sophisticated enterprise application integration tools, utilizing well-understood EDI and API standards or proprietary interfaces as our customers require. Our API integrations with Shopify, Magento, and other platforms enable seamless e-commerce integration.

Pharr International Bridge

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Luis A. Bazán
Bridge Director

The Pharr International Bridge allows for safe, orderly and efficient crossings for commercial and non-commercial vehicles. We do this by proactively implementing local, state and federal policies and procedures, coordinating bilateral efforts with government agencies, trade associations and businesses in the U.S. and Mexico. We deliver on our commitment striving for excellence in logistics by offering the safest and most efficient full-service commercial crossing in the South Texas region.

Pharr International Bridge: Investing Big for Faster Trade

The Pharr-Reynosa International Bridge serves as one of the most important commercial ports of entry for the U.S.-Mexico border. Pharr ranks 3rd in the nation for trade with Mexico, behind only Laredo and El Paso, and currently ranks as the 7th largest border crossing in the U.S. in terms of value for imports and exports.

Servicing the Automotive, Energy, Technology and Produce Industries, over 120,000 commercial trucks cross north and south through the Pharr Bridge on a monthly basis. These shipments consist of the following goods and commodities:

Top 5 Exports

- No. 1** Natural Gas
- No. 2** Vehicle Parts
- No. 3** TVs, Equipment
- No. 4** Gasoline
- No. 5** Computer Chips

Top 5 Imports

- No. 1** TVs, Equipment
- No. 2** Avocados
- No. 3** Vehicle Parts
- No. 4** Electrical Switches
- No. 5** Insulated Cable

The Pharr Port of Entry plays an important logistics role in the global economy with direct connectivity to freight corridors through land, air and sea. The Pharr Bridge's strategic location, surrounding infrastructure, services and potential for future investment and growth, give a competitive advantage to the City of Pharr, as well as the City of Reynosa and the rest of the Southern Texas-Northern Mexico border region.

New infrastructure projects and process improvements inside the U.S. port of entry, as well as in Mexico, will augment the current facilities and streamline the cargo inspection process, allowing for increased truck throughput and reduction of wait times for maximum efficiency. By 2023, the City of Pharr will invest over \$35 million in infrastructure improvements and build a



Future view 2021 after Pharr invests over \$35 million in port improvements.

second-span (an additional 4 lanes) next to the exiting bridge. These enhancements, along with the new freight access road and dedicated lanes for F.A.S.T. cargo and empties to Mexico customs, as well as the recently completed construction of the \$90 million modernized "Aduana" in Reynosa, will benefit trade and foreign investments going forward.

Importers, exporters, domestic and multinational manufacturing companies have found that using the Pharr-Reynosa International Bridge as the preferred port of entry is a strategic advantage to conduct their operations, as it has transformed into profits due to the region's low cost of doing business and its direct distribution access to markets.

Pharr's steadfast approach to positioning itself as one of the top leading bridges in the nation will be even more pronounced once process improvements, such as Unified Cargo Processing (UCP), are implemented. By monitoring trends in the manufacturing industry, perishables industry and the automotive and energy sectors, Pharr is poised for unparalleled growth.

With over \$36 billion in global trade, the Pharr Bridge continues to break import and export records by consistently registering 6% growth in imports and 5% growth in exports, despite the economic downturn brought on by the COVID-19 pandemic. We're investing big for faster trade. We are the Pharr International Bridge...Your Connection. Your Business. Your Bridge.



Phoenix Logistics

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Robert Kriewaldt
Senior Vice President

Mission Statement

- Strategic Real Estate
- Applied Technology
- Tailored Service
- Creativity
- Flexibility

These fundamentals reflect everything we do at Phoenix Logistics. We provide specialized support in locating and attaining the correct logistics solutions for every client we serve.

Most logistic competitors work to win 3PL contracts, and then attempt to secure the real estate to support it. As an affiliate of giant industrial real estate firm Phoenix Investors, we can quickly secure real estate solutions across its portfolio or leverage its market and financial strength to quickly source and acquire real estate to meet our client's need.



PHOENIX
LOGISTICS



Phoenix Logistics entered the third-party logistics space in 2017 as an affiliate of Phoenix Investors, a well-known commercial real estate firm that has been in operation since 1994. Based in Milwaukee, Wisconsin, we provide a broad range of logistics solutions tailored to meet the unique needs of each customer.

■ We operate on principles of continuous operational improvement and aggressive technology investment, ensuring that we can always provide the most advanced end-to-end supply chain support to our clients, including:

■ **Real estate.** Warehousing capacity in the United States is tighter than ever before. Shippers need to pair up with logistics partners who offer creative and effective solutions for reaching key markets. In conjunction with our affiliate Phoenix Investors, we maintain approximately 40 million square feet of industrial, retail, and office space spanning 25 states. We are constantly expanding this footprint by restoring underutilized properties for industrial use.

■ **Transportation management.** From freight brokerage to vendor management, we can operate as a lead logistics partner to help you optimize all inbound and outbound shipments at your facility. Our extensive network of carrier partners enables us to offer highly competitive rates on shipments ranging from raw materials to finished goods.

■ **Distribution and fulfillment.** Our experienced staff will help you build, operate, and maintain an efficient and cost-effective distribution network powered by advanced warehouse management systems and other supply chain technologies that reduce costs, eliminate operational waste, and optimize labor.

■ **Big data.** Through advanced WMS, EDI, transportation and distribution management solutions, and much more, Phoenix is focused on offering logistics solutions driven by informed decision-making. We will help you analyze your pool of data to identify pain points and risks, then help you create realistic plans to optimize your supply chain.

■ **Acquisitions.** Phoenix Logistics and Phoenix Investors have an established history of making fair deals that benefit the seller. If we purchase your real estate assets or your entire logistics business, you can rest assured that we will continue to invest in the acquisition and make a positive impact in the community surrounding it.

Logistical support spans these functions and more, so it's critical to find a 3PL that can identify and implement the best possible solutions for your operation. The team at Phoenix Logistics is ready to help.

PITT OHIO

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Charles L. Hammel III
President/Owner

Customer Driven

We strive to understand the diverse and emerging needs of our customer base. We provide reliable and dependable solutions that exceed our customers' expectations.

People Driven

We know that our most significant resource is our people. The success of our organization can be attributed to our employees' dedication, pride, and outstanding work ethic. The commitment and loyalty of our employees facilitates the success of our organization.

Quality Driven

We recognize that quality is important to our customers. We develop repeatable operations, safety, security, claims prevention and vehicle maintenance processes that minimize variance and improve consistency. We are committed to providing our customers with high-value, cost-efficient solutions. Our commitment to quality is integral to our company.



In our 41 years in the trucking industry, we have become the transportation and logistics provider you can trust; a reliable and dependable freight transportation provider with a flexible approach who can anticipate your needs. At the core of our business is our commitment to deliver quality service.

In addition to our legacy LTL freight solutions, PITT OHIO provides SUPPLY CHAIN, Expedite, Protect From Freeze (Freeze Protect or Protection), and TRUCKLOAD solutions in the Mid-Atlantic, Midwest and New England States, and across all of North America with our strategic partners.

Through technology, we drive simplicity for supply chains and meet our customers where they are in their digital journey. As leaders in digital technology, our differentiation strategy centers around reliable data, transparency, and actionable insights, so that you can better manage your customers' expectations. Our innovative tracking application, Delivery Track, provides dynamic day of delivery ETAs for LTL shipments.

Our commitment to People, Planet and Purpose encouraged us to rethink what we can do to revolutionize sustainability in business and in the trucking industry. We recognize the nature of our business, but also embrace opportunities for research

and application of renewable energy. Our renewable energy powered microgrid, found at two of our terminals, uses a patented, groundbreaking process that takes wind and solar energy into a battery system and the subsequent distribution of that power to points of use. We received the patent for this process in 2020.

It is our goal to promote the construction and maintenance of buildings that are environmentally responsible, efficient and healthy places to work. By creating healthy, encouraging places to work, we're able to hire and retain the best of the best in the industry. New construction projects are designed to meet certain sustainability standards in water, energy, and material usage efficiency to reach LEED (Leadership in Energy and Environmental Design) Certification levels. To date, PITT OHIO has 5 buildings that have achieved LEED status. Along with these certifications, we're reducing our carbon footprint with top of the line equipment, which also keeps our employees healthy, safe and comfortable.

Guided by visionary leadership and a shared spirit of innovation, PITT OHIO will continue to raise the bar with what differentiates us in the transportation and logistics industry—our service, safety standards, technology and sustainability.

PITT OHIO
SUPPLY CHAIN ■ GROUND ■ LTL ■ TL

Polaris Transportation Group

7099 Torbram Road • Mississauga, ON • Canada L4T 1G7 • 1-800-409-2269
U.S. Office: 4375 Glenbrook Road • Willoughby, Ohio 44094 • polaristransport.com • customercare@polaristransport.com

Mission

Founded in 1994, Polaris Transportation Group fosters a culture of mentorship and support for existing and future employees. In so doing we will create a customer experience unique to the transportation industry and we will continue to invest in the people and organizations that join our family of companies. We will support and recognize our social, cultural and environmental responsibilities to the communities we serve. Our reputation will be one of respect as an undisputed leader in our field and our company chosen over others as a trusted supplier and partner in the transportation industry.



For over 25 years, Polaris Transportation Group has been an award winning carrier of choice for Fortune 500 companies, 3PLs, global freight forwarders and small to medium size businesses alike. The Polaris Transportation Group is comprised of five operating divisions that are not only leading providers of cross-border LTL but of global logistics, transport, technology and hazmat certified warehousing. With the recent development of their in-house digital laboratory Polaris is at the cutting edge of technological innovation in the supply chain sector. A snapshot of their individual service strengths as follows:

Polaris Transportation is the largest independently Canadian owned, cross border LTL carrier. They specialize in the shipment of dry goods, priced by the hundredweight or by the skid and deliver industry leading transit times between Canada and the USA. Polaris Priority Plus service offers guaranteed overnight service between Toronto and Boston, NYC, Chicago, Cleveland, Cincinnati & Columbus. Customer service is a top priority at Polaris, you can rest assured your shipments will be delivered according to their stringent quality process.

Polaris Motor Freight Inc. is the U.S. headquarters of Polaris Transportation's LTL cross border operation based in Cleveland, Ohio. They are a full truckload and LTL carrier in the northeast Ohio market and specialize in distribution of freight in Ohio's largest metropolitan area. Polaris offers overnight daily departures to/from Canada and the USA.

Polaris Global Logistics (PGL) investigates larger opportunities within their customers' supply chain. These solutions include global requirements where PGL acts as the critical link for the North American transportation and distribution segment. Within North America, they provide all modes of transport, warehousing, distribution and supply chain management services. They can effectively deliver to every zip and postal code within Canada and the USA on a daily basis.



Polaris Commercial Warehousing facilities in Toronto, ON, can effectively distribute anywhere in Canada and the USA. From inbound shipment requirements, to picking and distribution of orders by courier, LTL or truckload carriers. Polaris' two facilities offer sorting, display assembly, co-packing for e-commerce, fulfillment and distribution. Commodities handled include CPG, bulk, medical devices, paper, apparel, hazmat, industrial and commercial products. Polaris specializes in the warehousing of hazardous materials and their operational facility and personnel are compliant with all regulations and safety protocols required for the handling of dangerous goods. If you need a presence in Canada, Polaris's Toronto facilities serve as the ideal distribution hub.

NorthStar Digital Solutions (NDS) is a cutting-edge technology company providing intelligent automation software. Through innovative technical design and development, along with foundational industry experience, their smart people, partners and technology platform have combined the very best ingredients for intelligent systems processing across enterprise platforms. Their team of automation engineers, architects, data scientists, developers and seasoned industry leaders can move at great speeds with unconstrained research and development facilities and platforms. NDS has successfully integrated blockchain hyperledger, robotic automation and smart contract processes. NDS touches all vertical market spaces with a specialization in transportation.



Port Logistics Group

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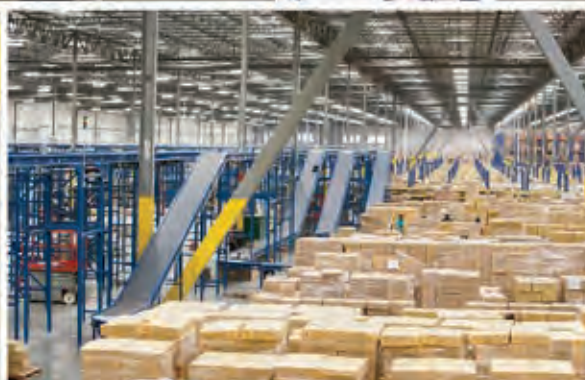


Jeffrey Wolpov
CEO

Mission Statement

PLG's mission is simple: We help brands keep their promises to customers by coordinating seamless, end-to-end omnichannel fulfillment. We are committed to enhancing the customer journey at every touchpoint through the pairing of powerful technological integrations and decades of advanced logistics experience.

Our focus is to provide scalable fulfillment solutions to merchants at every stage of their growth journey, from digitally-native vendors to the major nationwide retailer. Offering a full spectrum of fulfillment capabilities and flexible value-added services, PLG enables you to offer the very best customer experience—every time.



As one of the nation's leading omnichannel fulfillment providers catering to both established and emerging brands, Port Logistics Group manages a sophisticated nationwide distribution and fulfillment network that encompasses all four gateway ports for maximum speed and flexibility. With 18 state-of-the-art facilities and 6.5 million square feet of warehouse space, we are the experts in managing integrated, world-class fulfillment strategies for clients across multiple channels.

By embracing the latest technological advancements and automation solutions, PLG is uniquely equipped to handle the demands of our evolving retail marketplace. Our Whiplash platform offers merchants an unprecedented level of connectivity with their customers and inventory management systems, ensuring real-time, data-driven insights for rapidly-scaling D2C brands in addition to retail and wholesale merchants. No matter whether your order volumes are in the hundreds or the tens of thousands, we can scale effectively alongside you to ensure the highest level of support for you and your customers.

As consumer expectations grow for swifter delivery and increased communication touchpoints, PLG has pioneered a flexible and high-performance approach to warehousing and fulfillment which can be tailored to suit merchants' unique needs. Through the strategic placement of our facilities in proximity to major consumer and transportation hubs, we drive effective cost savings for clients while still achieving the fastest possible turnarounds and unparalleled standards of service.

By partnering with PLG, you will gain the powerful backing of a strategic, nationwide footprint and an extensive team of fulfillment experts—empowering your business to be the best it can be.

Your brand. Fulfilled.



Port of Galveston

Galveston Wharves at the Port of Galveston • 123 Rosenberg Ave., 8th Fl. • Galveston, TX 77550
Phone: 409-765-9321 • Fax: 409-766-6171 • portofgalveston.com



The Port of Galveston is one of Texas' major seaports. It does not rely on any tax dollars for operations. The Port generates current annual operating revenues of approximately \$51.5 million, provides an annual estimated economic impact to the State of Texas of over \$2.1 billion, and generates approximately 14,000 jobs.

The Port of Galveston, a Landlord Port with facilities and property approximating 840 acres on Galveston Island and adjacent Pelican Island, facilitates the movement of a diverse mix of domestic and international cargoes that deliver value to the region and the state. Situated on the Gulf Intracoastal Waterway and the Interstate Highway System (I-45), the Port is also served by two major western Class 1 railroads, the BNSF Railway Company, and the Union Pacific Railroad. The Galveston Ship Channel has an authorized depth of and is maintained at 45 feet, with channel widths up to 1,200 feet. The Port serves the cargo, cruise, and offshore oil and gas industries simultaneously.

One of the top 50 ports in the nation and one of the busiest seaports in Texas, the Port moves an average of 4 million short tons of cargo each year. This includes export grain, fertilizer and other dry and liquid bulk products, wind turbine towers, blades, nacelles and other components,

high and heavy cargoes, project cargoes, new, used and personally owned vehicles, agricultural machinery, construction equipment, and numerous other types of roll-on/roll-off cargoes, household goods, refrigerated fruit and produce, liner board, military cargo, and some containerized cargo. The Port maintains Roll-On/Roll-Off (Ro-Ro) terminal facilities in both the east and west end areas of the Port, currently serviced by 4 regular Ro-Ro shipping lines. They are Wallenius Wilhelmsen Logistics (WWL), American Roll-On Roll-Off Carrier (ARC), "K" Line, and Glovis. Nearly all of the Port's facilities have direct access to the Port's terminal railway services, Galveston Railroad, LP, which interchanges with the Class 1 railroads.

The Port of Galveston is also the Grantee for Foreign-Trade Zone (FTZ) No. 36, an Alternative Site Framework (ASF) Zone with activated sites located on Galveston Island Port facilities, Pelican Island, and other locations in Galveston County.



Port of Long Beach

415 West Ocean Blvd. • Long Beach, CA 90802
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Mario Cordero
Executive Director

Our Vision

The Port of Long Beach will be the global leader in operational excellence and environmental stewardship.

Mission

The Port of Long Beach is an international gateway for the reliable, efficient and sustainable movement of goods for the benefit of our local and global economies.

Value Proposition

Our customers choose the Port of Long Beach because we are the most reliable, most cost-effective and greenest gateway for the movement of goods to and from America's major consumer markets and producers.



The Port of Long Beach is a global leader in operational excellence and top-notch customer service, moving cargo with reliability, speed and efficiency—making it the premier U.S. gateway for trans-Pacific trade.

As the nation's second-busiest container seaport, the Port of Long Beach handles trade valued at \$170 billion annually and supports 2.6 million trade-related jobs across the United States, including 575,000 in Southern California and 1 in 5 jobs in Long Beach.

World-Class Facilities

Spanning 3,200 acres with 31 miles of waterfront, 10 piers, 66 post-Panamax cranes and some of the deepest berths in the country, the Port's world-class facilities can accommodate the largest shipping vessels in the world. Goods moving through the Port originate in or are destined for every U.S. congressional district.

With a keen eye toward building a successful and sustainable future, the Port is pursuing long-term capital improvement projects. In 2020, the Port opened a new bridge built for the modern era of shipping and goods movement. In 2021, the Port will complete the final phase of the world's most advanced container terminal.

In the next 10 years, the Port is planning \$1.7 billion in modernization projects, to further prepare for the demands of global

trade. Plans include investing \$1 billion in on-dock rail projects, aimed at substantially increasing reliability, adding capacity, strengthening competitiveness, improving speed-to-market and allowing for the rapid movement of cargo throughout the harbor.

By operating Foreign Trade Zone 50, the Port of Long Beach lessens the impacts of tariffs and eliminates Customs clearance delays by having shipments delivered directly to qualifying businesses within Orange County and parts of San Bernardino and Los Angeles counties.

Customers choose the Port of Long Beach for the most dependable, cost-effective and fastest delivery of goods in the world, along with the strong relationships it maintains with industry, community, environmental advocates and partner agencies. In 2020, industry leaders named it "The Best West Coast Seaport in North America" for the second consecutive year.



**Port of
LONG BEACH**
THE PORT OF CHOICE

Port of Los Angeles

425 S. Palos Verdes St. • PO Box 151 • San Pedro, CA 90733-0151
310-732-3508 • portoflosangeles.org • @PortofLA



Gene Seroka
Executive Director

Vision

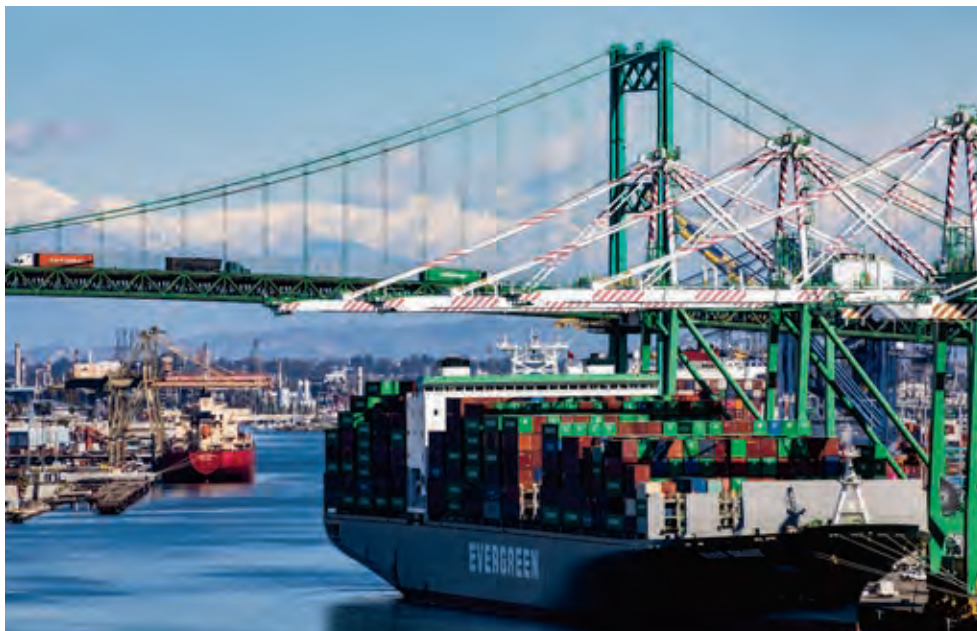
The Port of Los Angeles is America's Port®—the nation's #1 container port and the global model for sustainability, security, and social responsibility.

Mission

We deliver value to our customers by providing superior infrastructure and promoting efficient operations that maintain our essential role in the nation's economy and transportation network as North America's preferred gateway and a catalyst for job growth.

Ranked #1

When measured by container throughput, the Port has consecutively ranked as the number one port in the United States since 2000.



The Port of Los Angeles is the busiest container port in the Western Hemisphere, sustaining its rank as number one in the U.S. for more than 20 years with record volumes for containerized trade. Located in San Pedro Bay, 25 miles south of downtown Los Angeles, the Port encompasses 7,500 acres of land and water along 43 miles of waterfront.

Featuring various commodities from avocado to zinc, the Port's marine terminals manage a diverse portfolio of cargo-handling operations, including container, cruise and ferry, automobile, breakbulk, dry and liquid bulk and warehouse facilities that manage billions of dollars' worth of cargo each year.

Throughout the pandemic, all cargo terminals at the Port of Los Angeles have remained open and operational, keeping cargo flowing as an essential service to the nation. Executive Director Gene Seroka leads the Port's response to this global health crisis and concurrently serves as Chief Logistics Officer for the City of Los Angeles, overseeing Logistics Victory Los Angeles (LoVLA), a COVID-19 response effort that matches suppliers with local health care providers and others throughout the supply chain with PPE and other supplies.

An industry linchpin, the Port is an established leader of maintaining an efficient, sustainable supply chain, and a trailblazer in modernization and cybersecurity, taking a leadership role in adopting new technologies to improve the reliability, predictability, and efficiency of the flow of cargo across global seaborne trade. Examples of this forward-thinking are demonstrated in the Port's partnership with GE Transportation, a Wabtec company, in the 2016 launch of the digital information portal Port Optimizer™ and companion data tools Signal and Return Signal, launched in 2020. The Port has also partnered with IBM to design and operate a first-of-its-kind Port Cyber Resilience Center focused on detecting and protecting against malicious cyber incidents potentially impacting cargo flow.

During these challenging times, development and construction continue at the Port of Los Angeles. The Port will invest \$2.6 billion in infrastructure improvement projects through 2025, with a focus on improving the efficiency of goods movement across the supply chain. Both competitive and collaborative, the Port of Los Angeles serves as an economic bellwether and the premier international trade gateway of Southern California.

Port Tampa Bay

1101 Channelside Drive • Tampa, FL 33602
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Paul Anderson
President and CEO

“Port Tampa Bay is Florida’s largest port by cargo tonnage and land, and one of the most diversified ports in the Southeast. Our container business is growing exponentially as the explosive growth along the Tampa Bay/Orlando I-4 Corridor in Central Florida drives the desire for BCOs and container carriers to get closer to their customers. We envisioned this ability to provide greater efficiencies years ago and invested in cranes, road, rail and berth improvements to better serve this market. In the process, we have become Florida’s distribution hub and the most efficient port to serve the entire state.”



Port Tampa Bay has emerged as Florida’s new supply chain solution for container cargo—and in many cases, it’s most efficient.

Florida’s Distribution Hub: The addition of direct Asia container services last year provided a giant leap forward in serving Florida’s largest and fastest growing market—the Tampa Bay/Orlando I-4 Corridor. This Central Florida region is also one of the hottest industrial real estate markets in the country and Florida’s hub for distribution, logistics and manufacturing. Home to close to half of Florida’s population of 21 million residents, and welcoming a majority of the more than 126 million tourists who typically visit every year, the I-4 Corridor has the largest concentration of DCs in the state.

As the front door to the I-4, Port Tampa Bay is well situated to help businesses capitalize on the growth of the region, which is fueling demand for everything from retail, ecommerce, food & beverage, to energy products, and construction & building materials. To keep pace, the Port recently expanded terminal capacity with additional paved storage, and extended berths. Part of the expansion will also include additional cranes and equipment, and new transload warehouse facilities.

New Services Boost Efficiencies

Last year alone, Port Tampa Bay welcomed CMA CGM, COSCO, Evergreen, APL, OOCL, Maersk and Sealand to its

family of container lines offering new services, joining established carrier partners ZIM, MSC and Seacat. In 2020, Port Tampa Bay announced that ZIM Integrated Shipping Services will launch a new Tampa Mexico Shuttle container service. This new weekly, fixed-day service will provide importers and exporters a competitive new option to serve the expanding trade between the ports of Altamira and Tampa, reaching inland destinations throughout the Southeast and beyond.

For the beneficial cargo owners in the Port’s immediate backyard, these new services are especially good news. These companies are seeing significant savings in their supply chain/distribution costs as truckers can now make as many as 3 to 4 round trip deliveries per day from Port Tampa Bay to their DCs, which then service the entire state and reach into markets throughout the Southeast and beyond.

Together with partners like container terminal operator Ports America and cold storage specialist Port Logistics Refrigerated Services, Port Tampa Bay is expanding infrastructure and capacity to ensure it is well positioned for continued strong growth. In keeping with the Port’s master plan “Port Vision 2030,” it continues to align capital investment to sustain and grow its core lines of business, while also capturing new business through strategic diversification into additional new markets and commodities.

ProTrans

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Gary Cardenas
CEO

For over 25 years, ProTrans has been providing innovative customer solutions. We are a full-service 3PL provider offering logistics design, carrier procurement, supply chain management and transportation management.



Who we are

ProTrans is part of ProTrans Holdings, a private shareholder group, which includes ProTrans International, Inc., TOC Logistics International, Inc. and Millennial Transport Services.

ProTrans is a non-asset-based US logistics management company headquartered in Indianapolis, IN. We operate service centers throughout Canada, Mexico and the United States.

What we do

We are committed to providing solutions that expand our customers' resources through value-added service enhancements, leading-edge technology development and highly skilled customer support specialists.

How we do it

We create your unique logistics plan, utilize our versatile management and offer strategic control with our proprietary software and analytic tools; you control your shipments anytime and anywhere.

ProTrans Solutions

- **Turnkey third-party logistics (3PL):** Our 3PL solutions, including supply chain management, supply chain design, transportation procurement and route management, are designed to fulfill the increasingly complex demands of today's logistics.
- **Optimization through Consolidation:** We move more of your materials with fewer trucks, reducing your carbon footprint while keeping costs down and efficiencies high.
- **Optimization through Pool Distribution:** Our pool distribution solutions are an extended option available to provide cost savings in your supply chain. Our flexible network allows us to receive, validate and inventory your goods for final delivery in a particular geographic region thereby greatly reducing redundant shipping costs and unnecessary handling.
- **Unplanned/Expedited Freight Management:** ProTrans Freight Management solutions move your freight in the necessary time frames with real-time visibility by using dedicated teams focused on monitoring and tracking your loads.
- **Comprehensive Materials Management:** Flexible warehousing solutions that respond to your unique inventory and fulfillment needs.
- **Simplified Cross Border Processing:** Multiple validation and verification options for when you need to move inventory across the border.
- **Intellectual Talent:** ProTrans' overall success lies in our people. We've made a full commitment to our Talent Development Program, an in-depth program covering all departments in our company.

PSS Distribution Services

121 Ridge Rd • Jamesburg, NJ 08831
732-992-1300 • pssdistribution.com

Mission Statement

The team at PSS Distribution Services Co. is committed to providing reliable distribution, transportation and packaging services while maintaining a safe work environment at an acceptable level of return.

To facilitate continuous improvement and increase customer satisfaction by identifying, communicating, training and promoting the use of quality principles, concepts and technologies; and thereby be recognized throughout the Eastern United States as the leading authority on and champion for public and contract warehousing and logistics services provided by third parties.

We are committed to inspect, count, track and service promptly and efficiently all inbound and outbound movement of product for our customers. Employee education and training are based on this philosophy.



Based in the heart of the Northeast region, PSS continues to position itself as a leader in quality logistics solutions.

With 1 million square feet, PSS has continued to experience extensive growth in the areas of food, grocery and consumer products.

PSS has several recent accomplishments including:

- Named Warehouse of the Year by Barilla America.
- Continued investment in technology including an aggressive platform to provide efficient services in the E-Commerce sector.
- Growth in this area as well as the addition of E-Commerce specific software integration with all small parcel options and specific material handling equipment have enabled us to provide solutions in this rapidly growing segment.

Continued Growth

Powered by Softeon, PSS continues to experience significant growth in the packaging and value added side of the business: kitting, display and shipper builds, retail labeling and assembly. This, along with Shelf Life Management, has enabled PSS to continue to be a key component in our clients' supply chains.

Distribution services continue to be the primary function of the company. Modern facilities, strategically located between New York, NY and Philadelphia, PA, offer total distribution services including order selection, cross dock services, just in time movement and start-to-finish inventory management.

Located in the heart of the Northeast corridor, PSS Transportation continues to be a significant part of the truckload and LTL shipping networks as well as a comprehensive Direct Store Delivery and Consolidation program for premier Grocery chains such as Shop Rite and Price Rite.

The combination of Distribution, Transportation, Packaging and E-Commerce expertise in AIB audited and maintained facilities along with 21st century real-time technology will assist PSS in continued growth within the region.



R2 Logistics

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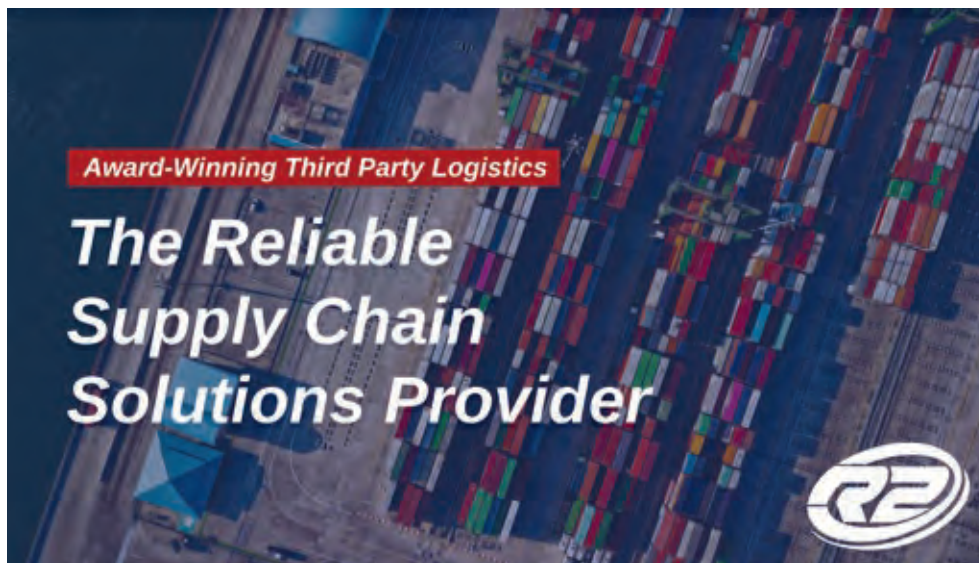


Ben Gase

Founder and CEO

The R2 Way

Obsess Over The Customer
Do It Now Attitude
Take Responsibility
Be Different
Always Think Positively
Compete, Compete,
Compete
Over-Communicate
Do Your Job
Play The Long Game
It's About The Team



WHO WE ARE

Founded in 2007, R2 Logistics is a global provider of transportation services and logistics solutions. As a third-party logistics company, we provide access to thousands of contracted transportation providers. With offices located across the United States we have the capacity to resolve all your shipping needs. Backed by game-changing technology and our culture for Reliable Service and Relentless Passion, we've built a strong reputation as an industry leader.

CUSTOMER SERVICE IS PRIORITY NUMBER 1

At R2 Logistics we pride ourselves on offering a superior customer service experience. Whether you're a Fortune 500 company or a small family owned business you are valued by R2 Logistics. Our Customer Service Advisory Board was formed to ensure every customer across the board is given the time and attention they deserve. Comprising a member from each of our offices, this group holds a weekly conference call to hold everyone accountable by discussing any service issues or successes. The team also meets twice annually at our corporate headquarters to brainstorm new and innovative ways to offer the best customer service the transportation industry has ever seen.

TAKING TECHNOLOGY FURTHER

R2 Logistics is superior to other 3PLs by how we utilize technology to ensure the highest level of accuracy and service. Our TMS creates data that help shippers streamline tasks and reduce costs. With an integrated customer portal, our tools deliver real-time connectivity across the supply chain. Whether you need transparent visibility to your operations, optimization of your business processes, or strategic data and reporting to help drive decisions, R2 Logistics has the tools you need.

SERVICES & CAPABILITIES

- Managed Transportation
- Truckload
- LTL
- Flatbed & Specialized
- Expedited & Air
- Intermodal
- Ocean
- Reverse Logistics



RateLinx

4602 S. Biltmore Lane, Suite 104 • Madison, WI 53718
262-565-6150 • sales@ratelinx.com • ratelinx.com



Shannon Vaillancourt
President and Founder

Mission:

RateLinx was founded in 2002 by Shannon Vaillancourt, with the idea there was a better way to give companies complete visibility to their supply chain. On a mission to revolutionize supply chains, they help customers accelerate their supply chain intelligence by driving data quality and delivering real-time, accurate, and tailored analytics, dashboards, and reports.

An award-winning provider of logistics software and services, RateLinx connects ship, track, and pay data, to deliver better logistics insights and better business outcomes. RateLinx collaborates with customers to drive significant savings and insights in their logistics operations in 45 days or less with low IT.

The best logistics data provider improves shipping, visibility, and payment.

RateLinx is an award-winning logistics solutions provider recognized in four Gartner market guides. Delivering all your logistics data in a single platform, RateLinx tailors its solutions to help you improve your business. The powerful RateLinx data quality engine leverages AI and machine learning to cleanse and normalize your freight data, delivering complete, timely, and accurate insights across your logistics processes. RateLinx solutions can stand-alone or augment any current systems with fast deployment and low IT for faster ROI.

TMS

ShipLinx is a global, high-volume, enterprise-class TMS that meets all your supply chain demands with no professional service or change fees. ShipLinx supports unlimited shipments, carriers, modes, locations, users, and currencies for maximum capability. Cloud-based and auto-updated, ShipLinx reduces costs and improves service by optimizing complex freight with multimodal execution, scheduling, and rating tools. Expand your TMS capability with multi-carrier small parcel, custom freight marketplace, and inbound supplier portal. RateLinx onboards any carrier quickly at no additional cost. Augment your existing TMS to achieve faster ROI with lower costs over a new system.

Real-Time Visibility

Our TracLinx real-time visibility platform delivers the scalability you need to track shipments worldwide. We'll onboard any carrier at no extra cost to track all locations, suppliers, customers, and volume in real-time. Get superior real-time visibility accuracy over multimodal shipments, suppliers, and carrier performance with



the industry's best data quality. Enhanced with AI, TracLinx powers accurate ETAs to streamline operations. Customizable predictive analytics and prescriptive insights alert you to potential issues and improvement opportunities.

Freight Audit & Payment

PayLinx is an artificial intelligence-driven freight audit and spend intelligence platform. Enabling process automation, exception management, and advanced analytics, PayLinx improves cost strategies, decision making, and carrier partnerships. Take control of your freight spend and eliminate exceptions and rate tolerances. Advanced analytics enable better decisions through powerful insights. Measure and monitor critical custom and standard KPIs in real-time.

Analytics

Even with a TMS, track and trace, and visibility systems in place, successful initiatives are still out of reach for many shippers. RateLinx's powerful analytics platform connects your existing systems and can turn your data into positive business results. Leverage advanced analytics to find cost-saving opportunities that impact your organization's bottom line.

RateLinx

Red Classic

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Spencer Webster
President

Outstanding Experiences. Exceptional Outcomes.

Mission Statement

Our mission is to be the safest provider of transportation, logistics and maintenance solutions to enable our customers and communities to thrive.

Services

- Truckload
- LTL
- Dedicated
- Intermodal
- Flatbed
- Drayage
- Refrigerated
- Logistics Solutions
- Managed Transportation
- Fleet Maintenance



Who We Are

At Red Classic, we know that getting things where they need to go—on time and cost efficient—is what shippers need. Red Classic is a wholly-owned subsidiary of Coca-Cola Consolidated, the largest Coca-Cola bottler in the U.S. that's been serving the world's best brands and flavors for more than 118 years. Today, we drive operational efficiency for customers across dozens of industries by offering a full range of transportation and fleet maintenance solutions customized for your business needs. Great brands trust us with their products because we deliver outstanding experiences and exceptional outcomes every day.

Transportation Solutions

With regional company-owned assets, an over-the-road (OTR) division and a network of more than 25,000 carrier partners managed through our full-service brokerage department, we have the reliable capacity your business demands. We offer truckload, less than truckload (LTL), dedicated and other logistics solutions for raw materials and finished products throughout the continental U.S. and Canada.

Fleet Maintenance Solutions

With more than 20,000 assets under management and 80+ full-service maintenance shops, we provide customized maintenance solutions that reduce downtime and labor costs. Our skilled technicians service more than 150 equipment types including class 7 and 8 tractors, trailers, material-handling equipment and everything in between.

The Red Classic Difference

- **Safety Comes First.** Safety Comes First is Red Rule #1. We invest in extensive, systematic training and the latest technology to ensure our drivers, our equipment and our freight arrive safely.
- **Assured Capacity.** As an asset-based 3PL and one of the largest beverage haulers



in the U.S., we understand the demands of today's shipping environment. Our growing network means we can expand with your business as your need for capacity evolves.

- **Industry Expertise.** Our experienced logistics team has the expertise to address the most complex and demanding shipping environments, saving you time and money.
- **Unparalleled Service.** Our commitment to extraordinary customer service breeds a culture of partnership with our customers that is second to none. We're proactive and responsive, so you can rest easy knowing your freight is handled with care.

Our Promise to You:

- We want you to experience service excellence in every interaction.
- You can count on us to operate with integrity, always.
- Our expertise is there for you, whenever and wherever you need it.

Experience what our customers already know—no matter what you need, Red Classic delivers.



RedStone Logistics

888-733-5030 • solutions@redstonelogistics.com • redstonelogistics.com



Jim Ritchie
President & CEO

Experience is Everything

RedStone Logistics is a unique, third-party logistics company specializing in improving supply chain effectiveness and efficiencies. Founded by logistics industry veterans with over 100 years combined experience, RedStone has expertise in managing large and complex supply chains around the world.

Transportation Services:

- Small Package
- Air Cargo
- LTL
- Truckload
- Intermodal
- Ocean
- Rail
- Expedited
- Final Mile

Custom Solutions:

- Supply Chain Optimization
- Contract Logistics
- Transactional Services
- Consulting

Put the power of RedStone to work for your organization.



888-733-5030
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redstonelogistics.com

Follow us on:

Gain a New Perspective on Your Supply Chain

Many 3PLs only focus on lowering costs. However, to improve supply chain performance, you need a partner that can not only lower costs but also improve on-time performance and customer satisfaction. The RedStone team of experts examines every aspect of your business for opportunities to increase process automation and drive efficiency across your entire supply chain.

Reduce Your Supply Chain Costs and Much More

To bring you more value, we place our focus on three keys to supply chain success:

1. Automating Routine Processes

Automating routine processes frees up your time to focus on more important tasks. We assist with automation by providing you with customized technology solutions.

2. Leveraging Our Knowledge and Relationships

While others focus almost solely on rates, RedStone leverages our knowledge and relationships to provide sustainable results that last for years past the initial rate reductions.

3. Continuously Driving Efficiency

Our passion for driving efficiency helps you gain additional long-term results. We take the time to get to know you and your business thoroughly so we can streamline every aspect of your supply chain.

Complete Logistics Management Services

We create value by focusing on strategic procurement, process design and automation, data and information management, and continuous improvement. After we optimize your supply chain processes, our dedicated team ensures on-time delivery and pick-up of shipments and simplified claims management.



Custom Solutions Created Just for Your Business

Manufacturers

Our roots are in manufacturing, and we know that to be the best you must focus on innovation, productivity, and quality. Unfortunately, driving the same level of efficiency in your supply chain is too often overlooked. You're the expert in manufacturing; we're the expert in supply chain efficiency.

Consumer Packaged Goods Companies

It is easy to get overwhelmed as you try to anticipate the moves of your competitors, consumer buying trends, and emerging technologies. We can help, from digital innovation to omnichannel solutions to aligning your value stream to meet your financial goals.

Distributors

As an individual distributor, your success depends on your ability to fulfill orders quickly, ship them accurately, and stay within budget. RedStone can optimize your supply chain to improve your bottom line.

Rinchem Company, Inc.

6133 Edith Blvd. NE • Albuquerque, NM 87107
505-345-3655 • 888-3PL-CHEM • info@rinchem.com • rinchem.com



Chuck Breinholt
President

STREAMLINING THE CHEMICAL SUPPLY CHAIN

Our Mission:

The mission of Rinchem Company, Inc. is to be the most responsive provider of Chemical Management Services any of our stakeholders ever experience. Responsiveness is identifying, documenting and fulfilling every expectation and requirement of our stakeholders. Stakeholders include customers, employees, communities, regulatory authorities and owners.

Locations:

- United States
- Taiwan
- Singapore
- South Korea
- Israel
- Ireland

Associations:

- ISO 9001
- IWLA Member
- WERC Member

Managing the Global Chemical Logistics Network

Rinchem Company, Inc. is a lead logistics provider with proven expertise in creating and managing safe and efficient supply chains for high purity, pre-packaged chemicals and gases. We apply three decades of expertise and innovation to provide the most reliable, efficient, and cost-effective solutions for our customers. Our services include global warehousing, transportation, freight forwarding, training and consulting.

Rinchem operates a broad network of temperature-controlled, hazardous materials compliant warehouses at locations across North America and in parts of Europe, the Middle East and Asia. Rinchem's transportation and warehousing networks are linked through Chem-Star®, a secure, Internet-based logistics management application and reporting interface that provides customers with real-time visibility into inventory location and status.

Rinchem Services and Areas of Expertise

Our areas of core competence include:

■ **Lead Logistics Solutions:** Coordination of all logistics-related activities and suppliers, including analysis of and recommendations regarding modes of transport, opportunities for consolidation, customer service performance levels and opportunities for supply chain improvement

■ **Warehousing:** Public or dedicated, temperature-controlled or ambient, regulated or non-regulated warehousing and handling of high-purity, pre-packaged chemicals, gases and other materials

■ **Transportation:** Intermodal, over-the-road transportation, cross-docking or local delivery of wet or dry chemicals or other materials in bottles, cases, drums, totes or other specialized containers

■ **Freight Forwarding:** International shipment of regulated, temperature-controlled chemicals and gases, including import, export, customs clearance, shipment consolidation and deconsolidation, drayage to and from the port, bonded warehousing, cross-docking,

**OVER 2.5 BILLION POUNDS
OF CHEMICALS AND GASES
SAFELY HANDLED
ANNUALLY**



transloading and door-to-door delivery services.

Chemical Management Expertise and Logistics Network Optimization

Rinchem's core area of expertise is our ability to safely and efficiently manage chemicals and gases, achieving full regulatory compliance and a reduction in risk. Unlike many general purpose third party logistics providers, Rinchem's assets, employees, systems, processes and expertise are customized for the management of chemicals and gases. Allowing Rinchem to manage the chemical supply chain enables companies to focus greater time and resources upon their own core competencies.

Rinchem engages in long-term, strategic relationships with its customers to systematically drive cost, risk and waste out of the supply chain. Strategies for improvement include the utilization of systems and expertise that deliver greater visibility, flexibility and control, leading to inventory reduction and improved service levels. Rinchem also helps customers to consolidate and optimize shipments and routing, reducing a company's environmental footprint, as well as overall logistics costs.



RMX

HQ: 355 Food Center Dr. • Bronx, NY 10474
888-824-7365 • rmxsales@rmxglobal.com • rmxglobal.com



Kelly Greenlee
President

Mission Statement

Deliver customer specific logistics solutions through exceptional customer service.

Memberships / Awards

- TIA Member
- NASTC Best Broker program
- EPA SmartWay Transportation Partner (Logistics)
- Diamond Broker Program – Truck Stop
- ITS Financial
- *Transport Topics* 2018 Top Freight Brokerage Firm
- SEDEX Respect Program
- Truckers Against Trafficking
- Top 3PL by *Food Logistics Magazine*

With locations in
Lakewood CO,
Springdale AR,
Monona WI, North
Port FL, Fayetteville
NC, Petersburg WV,
Bronx NY, Manchester
NH, Auburn ME



RMX Global is known for a legacy of leadership in truckload logistics since 1983. In addition to our 38 years of nationwide full truckload expertise and serving the complex needs of the food products industry, RMX has now launched a new last mile division. Last Mile LLC relieves the many issues shippers face delivering into a major city.

STRATEGIC - HISTORIC - EXPERIENCED

We simplify complex logistics challenges across the U.S. so customers and carriers can focus on running their business. RMX is known for efficient, progressive, and customer-focused solutions to improve freight transportation. With over 38 years of experience, we offer you an established transportation partner service that also continually provides innovative technology.

RMX SOLUTIONS

- Full Truckload: Refrigerated/Dry
- Flatbed
- Intermodal
- Expedited
- Dedicated
- Specialized
- Supply Chain Management: 3PL/4PL
- Custom Management Technology
- Customized Refrigerated Fleet
- Warehousing and Cold Storage
- Last Mile Service into NYC 5 Boroughs

Experience the ease and flexibility you get working with our online and mobile technology when you sign up as a customer or carrier with RMX Global.

Northeast Last Mile Logistics

We have a long history providing transportation in and around NYC and formed this new division to meet the growing final mile delivery needs. We have been serving the perishable food industry in wholesale, logistics, and warehousing since 1947 with our long line of premium companies in and around NYC. Last Mile LLC's ability to navigate the difficult challenges of final mile delivery in the Northeast has allowed us to be a preferred vendor for some of the major protein providers in the U.S.

The technology behind final-mile operations is vital to how businesses within this sector of the supply chain work. Our solution enables users to easily access their delivery status and uncover deep insights that will have a greater impact on the business as a whole. We are strategically located in two locations: The Hunts Point Co-op Market in the Bronx, New York, and Carteret, New Jersey, giving us immediate access to all five boroughs as well as major highways that service the Northeast region.

Be a part of the RMX team. Contact Us Today. RMXglobal.com



Romark Logistics

822 South Avenue West • Westfield, NJ 07090
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Marc Lebovitz
President

Mission:

To deliver customized logistics solutions built on an unwavering commitment to providing outstanding service for our customers.

As a family-owned company with integrity, we've built long-term relationships by adhering to our core values:

- Safety
- Family
- Quality
- Security
- Performance
- Sustainability
- Continuous Improvement



At Romark, we're always ready to take on the next logistics challenge. No matter how complex the need, our committed team works efficiently and effectively behind the scenes to make sure every moving part remains in sync — helping to keep your business flowing.

With more than 65 years of experience, we pride ourselves on offering industry insight, customized solutions, and personalized service. Our clients include major food, beverage, pharmaceutical, and retail businesses around the world.

We not only handle logistics all along the supply chain, but we also provide an added level of reassurance by protecting your brand as if it were our own. Our services include the following.

Distribution and Fulfillment

Our warehouse solutions feature both contract and public food-grade options, and we specialize in temperature-controlled requirements. With the latest automated systems and technologies, we offer short- and long-term storage, cross-dock operations, e-commerce fulfillment, packaging, assembly and JIT delivery, plant support, reverse logistics, and supply chain consulting.

Transportation Management

With web-based transportation management software, dry and temperature-controlled applications, and supply chain expertise, we keep your products moving domestically and internationally and offer the ease of a single point of contact. Our transportation services include dedicated fleet management, freight management, transportation brokerage, over-the-road transportation, pool distribution, white-glove service, and shuttle service.



Packaging and Value-Added Solutions

Whether you need customized kit assemblies or primary and secondary packaging, our processing and packaging technology enables us to quickly adapt to your needs and deliver packaging solutions with exceptional value. We've been recognized with industry certifications that speak to a track record of excellence in receiving, packaging, storing, and distributing products and displays to retail and e-commerce destinations across the nation.

Real Estate Development/ Facility Design

With decades of experience as an owner and developer of industrial real estate, we partner with our clients to optimize real estate development in a way that maximizes flexibility and future expansion opportunities. Our goal is to help you achieve the most efficient and cost-effective distribution operations to accommodate your supply chain needs.



Ruan

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Ben McLean
CEO

Mission Statement:

Empower the best team in logistics to deliver exceptional experiences for our partners.

Facts About Ruan

- Founded in 1932
- More than 300 operations in North America
- 6,000 team members
- Freight under management \$1.35 billion
- Award winning Megafsafe Safety Program

Ruan has expertise in transporting and warehousing goods in every industry—and the right people, processes, and technology to meet your supply chain needs.

Flexible Integrated Solutions

Ruan's Integrated Supply Chain Solutions offer it all, including Dedicated Contract Transportation, Managed Transportation, Value-Added Warehousing, and Brokerage Services. We combine the flexibility of our non-asset and asset-based capabilities with optimal technology and superior service focused on continuous improvement, cost savings, and supply chain efficiency. The Ruan team partners with customers to evaluate, optimize, and deliver a one-source, integrated supply chain solution. Ruan delivers these benefits and more because supply chain management is our core competency.

Dedicated Contract Transportation

Ruan's Dedicated Contract Transportation service provides complete door-to-door supply chain solutions without any of the hassles of owning and operating a private fleet. We assume all risk, handle labor, navigate regulations, and manage all of the equipment, taxes, and fuel.

Value-Added Warehousing

Innovative warehouse solutions are Ruan's specialty. Our Value-Added Warehousing services offer scalable and agile warehouse space tailored to our partners' requirements. We excel in warehouse management, engineered facility design, site selection, export consolidation, cross docking/postponement, subassembly, kitting, international crating, and more. Integration with Ruan's warehouse management system reduces touches, improves storage density, and increases overall flow efficiency.



Managed Transportation

Our Managed Transportation solution encompasses end to end optimization including capacity management, mode selection, freight planning and execution, inbound freight management, and freight invoice audit and payment. R2.O, Ruan's supply chain technology, is a best-of-breed transportation management system that builds efficient shipments and provides rich analytics to identify opportunities for continuous improvement and cost savings. Our expert team utilizes these resources to continuously optimize your network.

Brokerage Services

We provide capacity aggregation for transactional shipment management with annual or short-term contracted rates. Our reliable, experienced team of certified transportation brokers is an excellent support for dedicated or private fleets.

RUAN

Saddle Creek Logistics Services

3010 Saddle Creek Road • Lakeland, FL 33801
888-878-1177 • sales@sclogistics.com • sclogistics.com



Mark Cabrera
CEO

Leverage our wide array of logistics capabilities for omnichannel supply chain solutions that provide speed, service, and scalability.



At Saddle Creek, we specialize in helping retailers, manufacturers and e-commerce companies get products where they need to be quickly, cost-effectively and seamlessly.

Sophisticated Solutions

As an asset-based 3PL, we focus on designing and delivering omnichannel logistics solutions for our clients. Our approach is solution based and data driven, using the most advanced operational methods and sophisticated technologies.

Full Range of Services

Clients utilize our omnichannel fulfillment, warehousing and transportation services as stand-alone offerings or as part of an integrated logistics solution. They can also take advantage of a host of value-added services such as packaging, kitting, display building, embroidery and engraving.

Through our custom fulfillment solutions, they're able to accommodate customer requirements in a variety of channels - including e-commerce, direct selling and subscription/continuity programs.

Extensive Resources

Clients also have access to our nationwide network of strategic locations—49 shared-space and dedicated facilities across the country—totaling nearly 25 million square feet of warehouse space. They enjoy cost-effective, service-driven transportation capabilities including a large private fleet, a full set of brokerage services and extensive relationships with all major parcel providers.

Service Excellence

Saddle Creek is one of the largest family-owned logistics providers in the country. We have been in business for over 50 years and are recognized in our industry as an extremely high-level service provider.

Clients will tell you that we stand out due to our ability to deliver on our promises. This is driven by our company culture, which is one of integrity, strong performance expectations, a high level of accountability and the commitment to doing what is right for our clients and their customers each and every day.

We'll do **Whatever It Takes!** to ensure that your supply chain delivers.



SEKO Logistics

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James Gagne
President and CEO

- Ecommerce Logistics
- Air Freight Forwarding
Section 321/Type 86
- Ocean NVOCC Services
- Ground Transportation
- Home Delivery
- Heavyweight/Last Mile
- White Glove
- Cross-Border
Ecommerce
- Cross-Border Returns
- Parcel Express Services
- Expedited Cargo
- AOG/NFO Services
- Aerospace Logistics
- Medical (MedTec) and
High-Tech Logistics
- Healthcare Logistics
- Store Development
- Warehousing &
Distribution
- Customs Brokerage
- Value-Added Solutions
- Supply Chain Software
- TMS
- WMS
- Purchase Order
Management
- Asset Management
- Inventory Management
- Demand Chain
Management
- 60 USA Locations
- 120 Global Locations
- 40 Countries



We provide a suite of logistics services which enable you to use your supply chain as a competitive differentiator. As a client-centric organization, we are powered by the expertise of our people and our in-house developed, best-in-class, configurable technology.

SEKO helps to simplify processes by providing the right service and cost options with multiple carriers, and by improving your ability to monitor and track sales and purchase order activity.

Our logistics solutions are lean and efficient, with the core aim of improving your customer satisfaction and keeping your business running at peak performance.

With over 120 offices in 40 countries worldwide, our unique management model enables you to benefit from Global implementation experience and expertise across all industry sectors, coupled with

vital in-country knowledge and unparalleled service at the local level.

SEKO Logistics provides clients with:

- Fast, efficient decision-making
- Minimal bureaucracy—easy to do business with
- Local expertise through people that really care
- Responsiveness and reliability
- Flexibility and consistency
- Hands-on service and support
- Personal relationships
- Creative, configurable solutions
- Individual vertical sector experience



The Shippers Group

1015 W. Wintergreen Rd. • Hutchins, TX 75141
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Rob Doyle
President

Mission

Our mission is to provide the ultimate supply chain experience by **Understanding, Delivering and Improving** services that meet our customers' needs.



Since 1901, we've been in forward motion toward being an industry leader in third party logistics with a focus on our people, our processes and the technology we employ to enhance the overall customer experience.

With 15 locations and 6.3 million square feet of distribution space in 6 states from coast to coast, The Shippers Group is nationally recognized for the full range of logistics services we offer that include Public and Contract Warehousing, Contract Packaging, E-Commerce Order Fulfillment, and Transportation Services.

We are BRC Superior with an AA rating and AIB Superior with 990 out of 1000. The Shippers Group is a Green Citizen named by *Inbound Logistics* as a leading company that goes above and beyond to ensure global supply chains are sustainable and operations are socially and environmentally friendly.

World Class Supply Chain Support

Supply Chain performance drives our customers' bottom line and that's why The Shippers Group provides world class supply chain support from receiving inbound products to shipping outbound orders, inventory management and contract packaging. We are focused on Continuous Improvement to keep pace with consistent shifts in consumer demand. We are applying LEAN initiatives for improved productivity and accuracy. TSG is among *Inbound Logistics'* Top 100 3PL Providers for 2020.

The Shippers Group is implementing innovative solutions to effectively manage complex supply chains while reducing costs. Our systems provide agile support to meet the unique needs of our multi-customer distribution operations. From pick-to-voice, layer pickers, robust WMS and LMS systems, we're employing and developing innovative methods within our operations, improving accuracy and efficiency.



SMC³

653 Lexington Circle • Peachtree City, GA 30269
800-845-8090 • sales@smc3.com • smc3.com



Andrew Slusher
President and CEO

Mission Statement

SMC³ is the transportation industry standard for intelligent data, technology and education solutions disseminated through the integration of innovation, excellence, neutrality and community. Through its logistics intelligence solutions and educational events, SMC³ strives to consistently raise the level of knowledge, collaboration and technological capability in the freight transportation marketplace.

SMC³'s deeply-rooted core values of integrity, consistency, thought leadership and operational excellence support this mission and provide a foundation for a unique portfolio of industry solutions. The company's goal is to create a frictionless world for the transportation of goods by seamlessly connecting and empowering the industry.

Over-the-Road Technology and Data

With its range of solutions that integrate seamlessly into current business systems, SMC³ supports customers' needs as they grow, whether they're dealing with 10 shipments or 10,000 shipments per day. Shippers and 3PLs use SMC³'s peerless rating solutions to optimize their transportation spend, saving time and money on their freight shipments throughout North America.

Throughout its history, SMC³ has built unrivaled cachet in the industry, establishing itself as a stable and trustworthy partner that is a neutral voice serving shippers, carriers and third-party logistics companies with equal attention. The company's position as a leader has been honed through decades of developing secure and reliable solutions. Even as the company grows, it remains committed to its founding principles, motivated not by profit but by introducing dependable products that fill an industry need. SMC³'s wide array of shipment lifecycle optimization technology includes:

- **CzarLite** – LTL base rates for the U.S., Canada and Mexico
- **BidSense** – Truckload and LTL freight transportation bidding and pricing negotiation
- **RateWare XL** – Multi-tariff pricing management
- **CarrierConnect XL** – Carrier points of service and transit times
- **SMC³ LTL APIs** – Real-time visibility and execution throughout the complete shipment lifecycle
- **BatchMark XL** – Rapid LTL freight rating and analysis
- **Cost Intelligence System** – Profitability management for truckload and LTL carriers

With these tools, SMC³ customers can remove manual processes from their supply chains, which can help their businesses rise above the rest by allowing them to re-deploy resources to revenue-generating activities.



Education

SMC³ extends its expertise through supply chain educational forums across North America. Attendees keep current on industry trends and best practices used by global supply chain leaders at Connections and Jump Start, SMC³'s two annual supply chain conferences. The strategic educational and networking events feature cutting-edge, forward-thinking sessions, top-tier presenters and unique networking opportunities. SMC³ works to create events that facilitate lasting collaboration between logistics and transportation professionals from carrier, shipper, 3PL and technology-provider verticals. In partnership with LogisticsTrainingCenter.com, SMC³ has also developed LTL online education, and the industry's only online LTL certification program. Through five online, self-paced on-demand courses and classroom-style lectures, SMC³ shares its lifetime of LTL expertise with logistics stakeholders and future supply chain leaders looking to take their careers to the next level. SMC³'s technology, data and educational solutions are backed by a lifetime of industry understanding and technical expertise.



Sunland Logistics Solutions

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Arch Thomason
CEO

Purpose:

To help our customers do what they do better!

Vision:

To become a great 3PL company where people want to work and customers want to buy.

Company Values:

- Safety First
- Servant Leadership
- Learning Organization
- Results Matter

Industry Expertise:

- Retail
- eCommerce
- Reverse Logistics
- Automotive
- Chemical
- Industrial
- Paper



Sunland Logistics Solutions is a 3PL partner leveraging leading technologies and Lean principles to help shippers and manufacturers improve performance and drive value in their supply chains. With advanced distribution practices, inventory visibility, and a wide range of value-added services, Sunland specializes in supporting companies in the eCommerce fulfillment, retail, automotive, industrial, and chemical industries. Sunland's services include, but are not limited to:

- Inventory management
- Order fulfillment
- Reverse logistics
- Supply chain visibility
- Warehousing & distribution
- ISO-9001 certified operations
- Foreign Trade Zone
- Chemical & hazmat storage
- Shuttle transportation
- Relationship management strategies
- Value-Added Services

High-Performance Team

Originally founded in 1982, Sunland has been experiencing significant growth and attracting some of the industry's top talent. The team is focused on being a flexible partner who provides world class service with a winning continuous improvement culture. Building, growing, and aligning a diverse team of talent with a positive culture is essential to our customers' success.

Process Leadership

Sunland leverages Lean & Quality best practices to ensure we understand and meet our customers' service expectations and drive waste out of our operations. Whether we're kitting, quality testing electronics, or sub-assembling automotive bumpers, process leadership is the foundation for Sunland's team and our ability to earn customer trust.

Advanced Technology & Innovation

Sunland's Solutions Lab is our in-house team of IT and engineering experts who are passionate about leveraging data to provide customers with powerful insight to help them make better, faster business decisions through:

- Efficient integration
- A stable + secure cloud-based infrastructure
- Quality control
- Inventory visibility
- Improved productivity

Quantified Value to Customers

Adding value to customers' supply chains is our goal. Sunland's Customer Success Teams collaborate with customers to ensure we are supporting their organization's strategic goals in addition to successfully executing to their daily tactical needs.

Types of Quantified Value:

- Increased: Safety, service levels, quality, compliance, visibility, cash flow, profit, capabilities, market share
- Decreased: Costs, risk, or inventory



Sunset Transportation

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Lindsey Graves
CEO

Customized Solutions:

- Logistics Management
- Cross-border Logistics & Warehousing (MX)
- Shipper Technology
- Freight Audit & Payment
- Domestic & International Brokerage
- Expedite

The Sunset Way Values:

- Accountable
- Flexible
- Loyal
- Responsive
- Relationships

Industry Verticals:

- Automotive
- Construction
- Consumer Goods
- Food/Beverage
- Manufacturing
- Packaging
- Pet Food/Ingredients

A three-time Inbound Logistics Top 10 3PL Provider, Sunset is proud to deliver on our five customer promises through diverse and holistic 3PL solutions, our proprietary domestic and international LOGIK shipper dashboard and a strong focus on transparent, flexible service.

Is it time to TRULY manage your supply chain?

Sunset customers can get back to mission-critical business knowing their supply chain is being analyzed, monitored and improved month over month. We are accountable for providing ongoing savings and efficiencies through:

- Bid management and carrier procurement
- Route optimization & load planning
- TMS integration and visibility
- Freight bill audit and payment
- KPI compliance and reporting specific to your business needs

Need more visibility in your logistics program?

- Do you have eyes on every domestic and international shipment within your network?
- Can you access multiple carriers' pricing across modes within your system?
- Do you know if you're utilizing the lowest-cost carrier and right mode for every shipment?

If the answer is no, you're not alone! Even the most complex supply chains operate with significant gaps in visibility due to inefficient technology or unknown solutions. Sunset works to bridge these gaps with LOGIK, our proprietary shipper dashboard that provides:



- Shipment metrics, by spend, volume, mode, and charge
- Future, in-transit, and past shipment status via interactive maps for both domestic and international shipments
- Carrier selection, safety and compliance
- GL reconciliation
- Analytics to monitor shipment location details, assessorial costs, lane volume, commodity information and user specific KPI reporting

Why Sunset?

As a second-generation, woman-owned family business, Sunset places a high value on reliable, flexible customer service; putting our customers first as we have for the past 30 years! Let us help you navigate the challenges of strategic supply chain management. Join the Sunset family and see the difference.



Syfan Logistics

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855.287.8485 • Local: 770.287.8485 • Steve.Syfan@SyfanCorp.com • SyfanCorp.com



Steve Syfan

Executive Vice President

Who We Are

Syfan Transport is a Southeast-based carrier fleet featuring 24-7 dispatch, on-board GPS and ELD-compliant systems on every truck, and transparent reporting on all shipments. Together with its 3PL arm, Syfan Logistics, the company provides a diverse array of shipping needs throughout the continental United States, Mexico and Canada.

Vision Statement

We seek to be a guiding light of ethics, integrity and Christian faith in our service to the transportation industry.

Shipping & Logistics A Partnership of Trust and Transparency

Syfan Logistics and asset-based Syfan Transport have always focused on delivering the highest level of transparency and reliability for customer shipments—drama-free with no surprises.

This partnership of trust and loyalty has never been more important than today due to tight capacity of drivers and equipment. We stand by our shippers, work out challenges, and refuse to ever let them down.

Syfan honors these commitments because it's the right thing to do. During the COVID-19 pandemic, Syfan Logistics has been an essential provider trusted by the Centers for Disease Control & Prevention to ship medical supplies across the country, as well as hauling for food shippers, parcel delivery companies and other critical industries.

Continued Growth

Even during a difficult economy, Syfan's team of professionals has grown to 314 while doubling their annual number of loads over the past year. Meanwhile, Syfan continues to strengthen its over-the-road fleet while drawing from an expansive network of carrier partners to bolster its service and fill gaps.

Primary Insurance

Syfan also goes the extra mile by backing every load with primary cargo insurance—a commitment practiced by only a small percentage of the industry.

Syfan Services

Transport

Numerous Syfan Transport fleet trucks and equipment options are available around the clock. And all support is personally handled by the company's own 24-7 dispatch team (as opposed to a third-party answering service).

Expedited

Syfan's long history with JIT shipping for automotive manufacturers and small parcel air loads has forged a unique sensitivity to deadline-oriented shipping.



Executive team: Steve, Jim and Greg Syfan

Third-Party Logistics

For shippers faced with a sudden spike in shipping volume or the occasional spot load, Syfan Logistics fills emergency gaps.

Syfan Power Only

With much greater shipper demand for drop-and-hook shipments, Syfan's Power-Only single drivers and teams excel in easing sudden spikes in your shipping volume or filling in for your company fleet.

Yard Management Support

For warehouse and storage operations, our independent Yard Management Support division—Turbo Sales & Leasing—provides sales, leasing and warranty repair of terminal tractors.

Freight Management Services

Syfan Logistics also can manage a company's entire shipping program, providing significant cost savings.

Project Management

Whether relocating a frozen food shipment from a damaged warehouse or moving large equipment, no job is too big or too small.

Customer Industries

- Food and Beverage
- Parcel shipping
- Automotive
- Manufacturing
- Healthcare
- Construction materials
- Retail/Consumer products
- Electronics
- Paper products



Symbia Logistics

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Megan Smith
CEO

MISSION

Symbia Logistics' mission is to deliver exceptional service by being swift, experienced problem solvers. We value our customers and our team above all else. Symbia's true grit and can-do attitude are present in all aspects of our operations.

VISION

To expand and provide our third-party logistics services to growing North American manufacturers who place more value on getting things done the right way than on cutting corners and getting things done for the lowest possible price.

- 9 facilities
- 825,000 sq ft



From digital storefront integration and order fulfillment, to warehousing and industrial kitting, Symbia is the answer to all of your logistics needs. We don't cut corners and won't complicate things.

Our customers enjoy saving time and money, so they can focus on what really matters: Efficiency.

Join forces with Symbia Logistics and gain a powerful, WBE Certified team.

Why Does Symbia Do What They Do?

- We believe in taking action and finding solutions.
- We believe in breaking free from stereotypes and exceeding expectations.
- We believe that productivity and efficiency are a result of focusing on our strengths.

How Is Symbia Unique?

As the largest 3PL provider for the world's largest pallet pool, no other woman-owned business has achieved the same industry-leading growth. Symbia brings logistics back to the basics with a can-do attitude and a veteran team who isn't afraid to get their hands dirty.

What Does Symbia Do?

We provide general and dedicated logistics services, including e-fulfillment, fulfillment, and warehousing, to product-based businesses from our many facilities in North America.

Putting Our Clients' Needs First

As a privately held family business with over 150 years of combined experience, the Symbia Logistics team has provided facility-based supply chain support to a variety of industries including sporting goods, apparel, dry grocery, health and beauty, aerospace, chemical, industrial goods, kitting, and direct-to-consumer fulfillment services.

The Symbia Executive Team has been developing customized solutions and processes for logistics clients since 1989. We consistently exceed customer expectations and establish long-term partnerships.



SYMBIA LOGISTICS



Jim DeVeau
President and CEO

Mission Statement:

We have become a leader in fulfillment by thinking like our clients, providing the services they need when and where they need them. We strive to be the top provider of distribution and fulfillment services to the retail apparel, footwear and accessory markets.



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VP of Key Accounts
chris@tpservices.com



Taylored Fulfillment Services, a national leader in distribution, fulfillment, eCommerce and warehousing, recently finalized the acquisition of the US operations of Toll Global Logistics. This triples the company's footprint in key distribution metros while boosting Taylored's position as a TOP 100 third-party logistics provider in the US. By combining Toll's port-centric operations and Taylored's e-Commerce fulfillment centers in gateway markets, the acquisition unlocks substantial efficiencies producing a network effect of other streamlined processes. With enhanced service offerings including omni-channel retail, wholesale and e-Commerce fulfillment, cross-dock/transloading services, value-added services and transportation solutions, Taylored has expanded its full-service port-to-door supply chain solutions.

Our distribution centers are located near the nation's busiest ports of Miami, Los Angeles, Long Beach and New York as well as the distribution hotspot of Louisville, KY. We work with a diversified client base including wholesalers, manufacturers and retailers and our expertise extends to multiple brand and accessory categories.

We have invested significantly in systems and technology and maintain long-term relationships with all of the other interim suppliers along our clients' boxes journey. As a result, our clients can track their merchandise at every step through and from our warehouse to multiple points of destination.

Our services include:

- Warehousing and Distribution
- Supply Chain Management
- Value-Added Services and Merchandise Rework
- Transportation Management Services

Warehousing & Distribution

Taylored Services operates strategically located warehousing facilities in major locations on both coasts of the US. While our clients' products are stored with us, they are safe, secure and well-tracked. If products require a dedicated facility, or need to share space in one of our distribution centers, we have the resources and experience to meet our clients' warehousing and distribution needs, including:



- Pick & Pack
- E-Commerce
- Receiving - All receipts processed against service orders - EDI or flat file transmissions
- Inventory Control - Radio frequency barcode scanning and cycle counts
- 24/7 real time inventory visibility & reports through Taylored Access
- Fulfillment - Designed to meet client-specific needs (FIFO, LIFO, serial or lot #)
- Electronic Notification (EDI, flat file or Taylored Access)

Supply Chain Management

We work closely with our clients and all of their and our channel partners to ensure that we are implementing the most effective and efficient supply chain solutions, particularly with regard to warehousing, distribution and packaging.

Value-Added Distribution Solutions

From product inspection to ticketing, we offer a wide range of services to meet our clients' needs inside the box. Among the multiple value-added services Taylored provides are:

- Re-packing, re-ticketing & assortments
- Point-of-purchase display assembly
- Inserts and labeling
- Returns - client-defined processing, inspection, quality control and tracking

Transportation Management Services

Our expertise, experience and relationships extend to flexible and cost effective transportation solutions. We help our clients reliably move their products into and out of our warehouses.

Our shared commitment to your objectives makes us a dedicated provider focused on the very same goals that drive your business. Contact us today at 844-RING-TDF, and let us put our experience to work for you.

TForce Worldwide

1000 Windham Parkway • Bolingbrook, IL 60490
877-744-3818 • tfwwi.com



Tom Griffin
President

Mission:

At TForce Worldwide our goal is to provide the high-quality customer service of a local logistics provider, but with the reliability, reach, and breadth of services of a global shipper.

We strive to provide solutions that fit our clients' wants, as well as their needs, while providing the most cost-efficient way to meet their goals. And our proprietary TMS System, TFWW Connect, ensures the entire process is seamless, transparent, and hyper-connected, so clients can rest assured that regardless of the complexity of their shipments, we will take care of everything.



Backed by TFI International, a leader in transportation and logistics, TForce Worldwide is a non-asset based provider of logistics services through a locally based network of Agent Stations and Corporate Sales Personnel. Our Multi-Modal Platform provides less-than-truckload, truckload, intermodal, freight forwarding, expedited, and international parcel to more than 10,000 clients.

TForce Worldwide Offers Proven Efficiency

TFWW can help optimize your distribution and control costs through a wide spectrum of services, capacity, and technology.

As an experienced shipper, we know the challenges you face day in and day out. We've been there. This makes us uniquely qualified to provide you the logistics services you want and deserve.

Easy-to-Use Technology

Gain better visibility into every stage of the shipping process—from any device, in real time. From obtaining quotes to managing freight, our proprietary software system—TFWW Connect—is designed with you in mind.

We make connection simple with multiple integration options including single sign-on, EDI, API, as well as plug-ins

for major CMS platforms. The TFWW Connect on-boarding process is backed by a fully dedicated team to instill confidence through trusted direction.

From the simplest to the most complex shipments, our technology ensures your shipping experience is seamless, transparent and hyper-connected.

Experienced Agent Station Network

Our nationwide Agent Station Network is TFWW's strongest asset with more than 140 stations across the U.S. providing 24/7 availability, all staffed with knowledgeable, experienced personnel.

Bolstered by solid carrier partnerships and the power of an established transportation leader, TFI International, we offer the local knowledge, personal attention, and experience you need.

Services for Any Mode, Any Size, Any Time

TFWW's expert staff will match you with the right mode and carrier to deliver your goods where you want, when you want. We offer a variety of services to meet your every shipping need.

Many of the world's most storied brands rely on TForce Worldwide to connect with their customers. Now you can too.



TransGroup Global Logistics

18850 8th Ave S. • Seattle, WA 98148
800-444-0294 • info@transgroup.com • transgroup.com

- U.S. Owned, Globally Connected
- Transport & Logistics Nationwide/Worldwide
- Global Warehousing & Distribution
- Integrated Supply Chain Management
- Industry-Leading Technology
- Customer Centric Approach
- Custom Tailored Systems & Solutions
- Heavy Project Logistics



Our logistics expertise is a balanced cross-discipline of domestic, international and warehouse/distribution services, making TransGroup a true single-source transportation and logistics provider. Our 'Customer Centric' approach, global reach and industry-leading software enable us to do just that. We partner with our clients to tailor and integrate logistics systems and solutions that deliver value across the entire enterprise.

We create logistics solutions that matter.

International Services

- Global Air
- Worldwide Consolidation
- FCL / LCL
- Air & Ocean Charter
- Complete Project Cargo Services
- Dangerous Goods
- Customs Brokerage
- C-TPAT Validated
- Overseas Warehousing & Distribution
- FMC OTI / NVOCC Licensed

North American Services

- Next Flight Out
- Next Day AM / PM
- Second Day
- TranSaver 3-5 Day
- Express LTL / FTL

- Hot Shot Options
- Specialized Equipment
- Air Charter
- Trade Show Services
- Asset Recovery / Reverse Logistics
- White Glove Services
- Warehousing & Distribution
- TransBorder Expertise (Canada/USA/ Mexico)

Technology

- Global Tracking
- Online Shipment Initiation
- Worldwide P.O. Management
- Proactive Milestone & Status Notifications
- Reports / Metrics
- Global Warehouse Management
- TMS Online LTL Rating & Dispatch
- EDI / XML / ERP Integration
- Internally Developed for Maximum Flexibility

**Get our Mobile App
by visiting:**
<http://app.transgroup.com>

TRANSGROUP
GLOBAL LOGISTICS

Transporeon

500 Office Center Drive • Suite 400 • Fort Washington, PA 19034
contact-us@transporeon.com • www.transporeon.com



Ed Moran

*Managing Director and
SVP Sales & Marketing*

Mission Statement

Transporeon provides logistics professionals with new ways to improve processes and significantly increase logistics efficiency and sustainability with an unsurpassed global network that creates an extensive ecosystem for shipper-carrier collaboration. By running ever-evolving logistics platforms, publishing unique industry insights and offering modular digital solutions, we enable shippers and carriers to engage at different levels of digital maturity and achieve continuous improvement.

Transporeon cloud-based logistics platforms provide end-to-end transportation management software solutions—a full-service portfolio for shippers, suppliers, retailers, goods recipients and carriers that enables shared efficiencies for all logistics partners in the supply chain.

The company connects a worldwide network of more than 1,200 shippers and retailers with over 90,000 logistics service providers in 100+ countries in real time through its three transportation management platforms: Transporeon for shipment execution, Ticontract for transportation procurement and Mercareon for retail-specific dock scheduling.

These platforms for intelligent transport logistics create a digital connection between shippers and carriers to boost logistics performance and profitability with every freight load. By leveraging the latest capabilities, including artificial intelligence and predictive analytics, Transporeon solutions cut CO2 emissions, empty runs and truck waiting times while digitizing manual processes.

Delivering Connections

Global, security-certified Transporeon platforms optimize logistics processes with solutions that include:

- Transportation Sourcing/RFP Management
- Rate Management
- Shipment Execution
- Dock Scheduling
- Tracking & Visibility
- Connectivity & Integration
- Market Intelligence

Transportation Sourcing

The Ticontract multimodal freight bid management platform accelerates your strategic sourcing process. A neutral sourcing technology specifically created to comprehensively analyze and optimize



transportation bids, Ticontract can help you find the right logistics service providers and reduce administrative workload associated with the RFP process for greater market transparency, easily comparable offers and insightful reports at the click of a mouse. Simplify your bid communications with a fully customizable RFI/RFP platform, with integrated features for FTL, LTL, air and ocean.

Automated Shipment Execution

The Transporeon transportation management platform is purpose-built for supply chain communication and efficient, scalable freight assignment. Transporeon offers full connectivity to ERP and a complete range of transportation management functionality to help solve your daily logistics challenges. Cut transportation and administration costs by utilizing spot-market freight assignment for day-by-day capacity and demand matching in real-time to a closed pool of carriers, or fully automated freight assignment to automatically assign the freight order to a contract carrier based on pre-set criteria.

Modular Logistics Software and Agile Connectivity

With access to one of the world's largest and fastest-growing carrier networks, Transporeon provides you with connectivity and services for your carriers on top of your existing ERP or TMS system, in addition to onboarding, consultancy and lifetime multilingual support for both shippers and carriers. Transporeon Americas is based in Fort Washington, PA, with global locations across Europe, Russia and Asia.



Transport America

sales@transportamerica.com
651-686-2500 • transportamerica.com



Eric Anson
President

Mission:

At Transport America our mission is to change trucking for the better through a focus on safety, respect, and operational excellence. We fuel this mission through creativity, innovation, and strategic thinking. We create meaningful solutions while delivering the respect our drivers and customers deserve through straightforward communications.



TRUCKLOAD

Transport America, a TFI International, Inc. company, is a leading truckload and logistics transportation provider based in Eagan, MN established in 1984. We have a history of superior service that drives long-term partnerships. The trucking company that's changing trucking, Transport America's culture is based on the company core values of safety, sustainability, integrity, and respect. We continually seek to align ourselves with partners who share the same values. Transport America provides a wide range of services including dedicated services, over-the-road solo, over-the-road teams, intermodal, and logistics; servicing the United States, Mexico, and Canada.

In our dedicated division we have customer partnerships spanning decades. To better know and service our dedicated customers, we offer the option to enlist onsite resources for your business. That's right, a Transport America associate based out of your location to provide personal and responsive service. For dry-van one-way truckload, we focus on being the right-sized carrier. Transport America is big enough to provide capacity and small enough to know and care about your business. We commit to what we promise and deliver loyalty.

At Transport America our mission is to change trucking for the better through a

focus on safety, respect, and operational excellence. We drive this mission through creativity, innovation, and strategic thinking. We create meaningful solutions and deliver respect to our drivers and customers through straightforward communication..

TA LOGISTICS

At TA Logistics, smoothing your supply chain is our purpose. TA Logistics, founded in 2000, has long provided third-party logistics services for manufacturing, industrial and retail-based businesses. Building from our 20 years in brokerage, we've broadened our portfolio of service offerings. Now we provide for dedicated truckload capacity, freight brokerage, transportation management and network optimization, warehousing and distribution and supply chain engineering. We take a unique approach to logistics:

1. Understand your supply chain to solve your needs
2. Research asset-based logistics solutions
3. Provide protection for the fluctuations in your demand



TransportGistics

28 N. Country Rd, Suite 103 • Mt. Sinai, NY 11766
631-567-4100 • Fax: 631-563-2497 • sales@transportgistics.com • transportgistics.com



TransportGistics puts you in control with global products and services that provide market leading, simple, incremental solutions for transportation management and logistics functions within your supply chain.

Our cloud-based solutions enable you to:

- Reduce costs
- Improve processes
- Identify hidden costs of transportation
- Improve vendor compliance routing guide
- Improve Supplier Relationship Management (SRM)
- Monitor vendor performance
- Improve shipment visibility
- Generate automatic, status-driven alerts
- Monitor carrier performance with respect to time in transit, service failure, and billing
- Enable collaboration
- Source, procure and execute transportation services

Transportation Management and Logistics Solutions

TransportGistics is a global, multi-product and services company that provides market leading, simple, incremental solutions for transportation and logistics management.

Our rich history in micro logistics solutions and macro logistics strategies is the fuel that drives our “simpler is better” model.

Our innovative, incremental strategy to assist and enable our customers to achieve cost-effective independence from legacy practices has been highly successful, resulting in double-digit cost savings, cost avoidance and rapid ROI.

Solutions should not be more complicated than the problems they are trying to solve!

Simpler is better, and that is the approach that we have taken with our cloud-based products and services. These easy-to-implement, easy-to-use solutions allow users to reduce costs and improve operations while managing discrete transportation and logistics management functions. Each solution can be deployed separately or in an integrated environment to meet requirements to improve business processes, reduce costs and enhance service offerings.

- **BLGen:** Create and communicate transportation forms, including packing slips, carton labels, LTL and TL Bills of Lading.
- **FreightTracing:** Provides complete shipment visibility, including alerts.
- **InsourceAudit:** A freight bill management, shipment information, cost-control portal that enables users to manage and control pricing and performance, freight invoices, payment and information.
- **ProductReturns:** Enables users to automatically generate return authorizations, route shipments via least-cost carriers, generate bar-coded Bills of Lading, and facilitates the receiving and accounts payable/receivable processes.
- **RoutingGuides:** Enables streamlined and simplified production, maintenance, distribution, and compliance by eliminating the need to print, distribute

**Simpler-is-better
transportation
management and
logistics solutions.**

and track receipt of new or updated Routing Guides.

- **TGIBid:** TGIBid is a cloud-based shipment auction portal that allows your users to submit your shipments to your carrier partners and then award the carrier with the shipment that meets your criteria (price, transit time, etc).
- **TGIRater:** Cloud-based solution programmed with your negotiated carrier agreements. Community management allows for hierarchical access with easy management and usability. Company data can be pre-populated for ease of entry and improved data quality. Time in transit and least-cost carrier calculations are performed across your entire carrier base.

TransportGistics products address the inefficiencies in transportation management, reduce freight expense, simplify the functions to be executed, make transportation information immediately visible to all parties involved in the transaction process, improve communications, and increase productivity.

If you are interested in simplifying your complex logistics challenges, call us today at **631-567-4100**, or visit us on the web at **www.transportgistics.com**



Trinity Logistics

50 Fallon Ave. • Seaford, DE 19973
800-846-3400 • trinitylogistics.com



Sarah Ruffcorn
President

Mission Statement

Trinity Logistics delivers creative logistics solutions through a dynamic mix of human ingenuity and innovative technology, enriching the lives of those we serve.



Trinity Logistics, a Burris Logistics Company, is a top 3PL providing a people-centric approach to freight solutions. Our commitment to being different on purpose, whether it be through innovative supply chain solutions or outstanding customer service is what separates us from the competition. Trinity has specialized in arranging transportation for truckload, less-than-truckload, intermodal, expedited, international, as well as fully managed freight solutions for over 40 years. Our combined expertise with Burris Logistics means we are poised to offer end-to-end cold chain solutions from production to delivery.

Trinity services the food and beverage, construction and manufacturing, and chemical industries through offices in Delaware, Missouri, Minnesota, Florida, Texas, and Iowa. Trinity also has more than 100 Authorized Freight Agent Offices servicing North America.

Our in-house team of developers helps us provide best-in-class service through technology tools, including a customer portal, capacity tools, a proprietary TMS, and digital freight matching.

Cold Chain Food and Beverage

Trinity Logistics works with thousands of shippers in the food and beverage industry, making us well-versed in cold chain requirements and regulations. Trinity's parent company, Burris Logistics, is one of the top cold storage providers in North

America. Equipped with state of the industry technology, working with Trinity means you can feel at ease knowing your product is well taken care of during transport.

Construction and Manufacturing

Trinity Logistics has a large network of specialized carriers that are able to execute a wide range of flatbed, Over-Dimensional, and project shipments. Our team has extensive knowledge of the rules and requirements of Heavy Haul freight and will work with you every step of the way.

Chemical

Trinity has been a Responsible Care® Partner since 2009. Through Trinity's stringent carrier vetting process, chemical and hazmat shippers can reduce risk by knowing the carrier handling their freight is experienced, certified, and aware of current regulations. Trinity serves some of the top automotive, agricultural, industrial, and specialty chemical manufacturers.

Do you ship products outside of these industries? No problem, we can help.

For more information about Trinity's freight services and how we can help your business, visit trinitylogistics.com.



Corporate Contact Info
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Director of Marketing
Email: Brittany.siegel@trinitylogistics.com

TST Logistics

PO Box 2118 • Burlington, NC 27216 • 800-822-1063
info@tstlogistics.com • tstlogistics.com

TST Logistics Inc. has three decades of experience and expertise in providing services such as transportation, freight hauling, warehousing, storage, mobile storage and more.

TST Logistics endeavors to deliver current, cost-effective supply chain solutions that contribute to the success and satisfaction of our customers by providing professional, reliable warehousing, freight transportation and mobile storage services that meet needs and exceed expectations.

Contact us to find out how we can help with all of your needs, whether you are a large or small business, or a local customer. Our company has grown consistently and continued to expand our services over the last 30 years while serving the Eastern United States along with our home state of North Carolina.



Warehousing

There is a common misconception about warehousing that assumes there's little more to it than keeping a roof standing over some goods for a period of time. Really, how hard can that be?

But those in the logistics business understand that there's a lot more to storing and moving millions of items out of multiple storage locations year after year. Managing inventory in a warehousing operation is both an art and a science.

That's why so many customers trust TST Logistics warehousing services. Through just-in-time delivery combining our storage and supply capacities, we can help you avoid costly on-site storage for both retail and manufacturing purposes.

Transportation

TST Logistics is uniquely positioned to service your freight-hauling needs in the Eastern United States. With a large fleet of well-maintained trucks operated by safety-conscious, commonsense drivers and staff, TST Logistics has more than 20 years of experience in delivering the goods. We view

our role as that of a partner in your supply chain, making sure your freight arrives on time, on budget, and in good order.

At every turn we seek to add value for our customers. Our real-time freight tracking system enables you to get reliable data on location and delivery pertaining to your shipment. And even better than that, you can talk to an actual person at TST Logistics—not a computer; isn't that nice to know these days?

The TST Advantage:

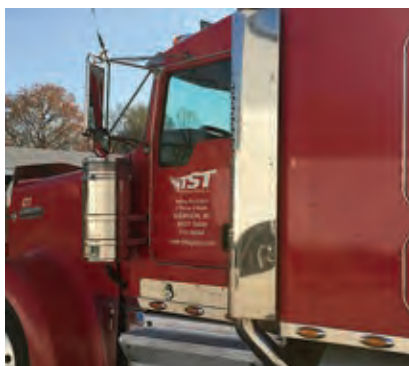
- TL and LTL service
- Next-day and same-day delivery
- Primarily serving NC, SC and VA, but also serving the majority of the East Coast
- Shipment tracking technology
- Adaptable rate schedule
- Safety-conscious drivers and staff
- Added value through warehousing services



Mobile Storage

Need a little extra storage for a while, but don't have the space on-site to put a roof over the goods?

TST Logistics can help. Our mobile storage is ideal for short-term or long-term on-site projects. We'll bring a trailer over, drop it off and come back for it when you're done. Whether you need 1 or 100 units, trailer storage is simple, secure, mobile, and affordable.



U.S. Bank Global Transportation Payment Solutions

usbpayment.com/transportation-solutions • 866-274-5898
CPSTransportation@usb.com



Jeff Pape
*Senior Vice President
Head of Product &
Marketing
Global Transportation*



We go the distance

No matter what role you play in managing a successful supply chain, you count on reliable partners and visibility into critical data to make informed decisions. Depend on the strength and experience of U.S. Bank to provide the payment integrity, efficiency and security only a bank can provide.

U.S. Bank Freight Payment

Get the reliability and visibility you need to make your supply chain a strategic advantage. U.S. Bank Freight Payment is a comprehensive solution designed to streamline freight invoice audit and payment processes at every mile through:

- **100% pre-payment audit** to uncover savings
- **Enhanced working capital** while providing carriers timely, predictable payment
- **Collaborative tools and dedicated customer service** to reduce errors and resolve exceptions quickly
- **Dynamic freight analytics tools and services** that turn raw data into smart decisions

U.S. Bank Voyager® Fleet Program

Managing fleet expenses and payments can be a major challenge—especially if you don't have the right solutions. The Voyager Fleet Program enhances driver efficiency and reduces costs while supporting data integrity and preventing fraud and misuse.

We offer:

- **Convenience:** Pay for fuel and maintenance expenses at more than 320,000 locations nationwide.
- **Control:** Support fleet policies, budgeting, forecasting and auditing with streamlined data.
- **Cost savings:** Prevent fraud and misuse with automated controls, reporting and real-time alerts.
- **Customer service:** Available 24 hours a day, whether you're in the office or on the road.



UCBOS Inc.

1000 Parkwood Circle, Suite 950 • Atlanta, GA 30339
1-866-V1UCBOS • inquiries@ucbos.com • www.ucbos.com




Shan Muthuvelu
President & CEO

UCBOS Inc. is an Atlanta-based global technology firm with the mission to provide the world's first **"No-Code Enterprise Application Platform"** and revolutionize the notion of the composable enterprise. Its vision is to Enable Business and IT Digital & IT Transformation by simplifying AI/ML technologies, making them practical for business and IT to adapt and transcend coding and business limitations.


Supply Chain Convergence & Orchestration
"Model the Business – Manage the Business"

Legacy Ecosystem Complexity



Decision Making Process crippled by the Complexity of the Ecosystems
Interoperability of data continues to be complicated and difficult
Inflexible Legacy systems limit the business' agility

Legacy Ecosystem Extensions



Empower your business decisions with ML/AI and a self-learning platform
Expand your Ecosystem with a No-Code Composable Platform
Deliver Business Change in Days not months or years

What is UCBOS™?

UCBOS™—"Unified Commerce Business Optimization System," a Powerful Business Platform with Composable Architecture, Metadata Framework, Machine Learning Capabilities, and Prebuilt Modules, offers scalability and flexibility to solve dynamic business problems that involve best of breed applications, third-party cloud solutions, sensors, and machines that enterprises are currently solving in-house on a case-by-case basis without touching the existing ecosystems.

The UCBOS™ Platform is a Composable No-Code Enterprise Business Platform. The platform complements traditional "best of the breed" and cloud solutions in an unprecedented way, as it empowers enterprises to manage their business needs through a Composable Asset Model, which is both straightforward, extendable, and time-friendly compared to traditional models.

Key features of UCBOS™:

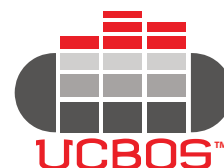
The UCBOS™ application builder enables IT organizations to build business-critical in-house applications, AI modules, mobile apps, and workflows across internal systems and external platforms all on a single unified platform. The platform aids with technology consolidation initiatives across teams.

The UCBOS™ No-Code platform empowers business users to analyze business trends, model outcomes through machine learning designs, and orchestrate the preferred business workflows in real time. The platform alleviates business team dependencies on developers and expedites business transformation initiatives.

UCBOS™ comes with an intelligence-embedded integration platform on top of its metadata technology, which self-learns from multiple disparate systems, including IoT and big data, to make informed business decisions. The platform produces AI/ML ready data from the operational data.

UCBOS™ comes with many built-in business modules and industry-standard technical capabilities, such as business entity hierarchies, customizable UIs and Dashboards, Charts and Graphs, Graphical UIs, rules and workflows, API learning, ML, flexible Permissions, Data Level Security, and more.

Product demonstrations are available upon request.



UniGroup Logistics

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Scott Kluesner
*Executive Vice President
of Operations*

UniGroup Logistics is the logistics partner customers rely on for their most complex supply chain challenges.



Expertise in High-Touch, End-to-End Supply Chain Solutions

Built on the heritage of Mayflower and United Van Lines, we leverage our company-owned assets to meet the needs of every type of customer.

Project Management

Through the UniGroup brands and driver-owned assets, UniGroup Logistics brands offer single-source supply chain management solutions, providing transportation, warehousing, freight forwarding and project management services tailored to fit the scope of your project. Through data-driven analysis and network design services, our supply chain engineers can help facilitate continuous supply chain efficiency and cost savings within your supply network. Additionally, our reverse logistics specialists can analyze your supply chain and design a reverse logistics solution to help you efficiently recycle raw goods and industrial salvage.

Final Mile Home Delivery

Are you ready to strengthen your supply chain and outpace the competition? Now more than ever, your customers expect a seamless buying journey. That's why we do more than just deliver. Your customers will appreciate the transparency of their shipping and delivery experience with our shipment tracking and order capabilities.

With real-time status on all orders and summary billing reports, our user-friendly technology is just one more way we provide your customers with peace of mind.

Domestic Transportation and Shipping Solutions

Leveraging network and driver-owned assets we can provide shipping anywhere in the U.S. We offer Full Truckload (FTL), Less-Than-Truckload (LTL), Intermodal and Specialty Freight shipping options. Our transportation networks allow us to provide regional and long-haul transportation and arrange all of your local and intrastate transport needs.

International Transportation

We provide custom international freight solutions designed to fit your timetable while providing the quality of service you expect from a transportation leader. Let our air and ocean freight forwarding specialists help arrange a mode of transport that best fits your international shipping needs.

Customs Brokerage Services

Our experienced team of federally permitted customs brokers can help streamline your global trade, helping to ensure your shipments arrive on time and within regulation. From Importer Security Filings to customized trade solutions, we help expedite your shipments, keeping your supply chain moving forward.



UTXL

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Paul Schultz
CEO

Our Mission:

- ...place safety FIRST.
- ...pursue perfection.
- ...achieve excellence.



Together, let's expedite excellence.

The best transportation brokers enhance safety and service, provide proactive communications with in-transit visibility, and help reduce supply chain costs. Shippers also rely on their most dependable brokers, such as UTXL, to support their core carrier group during surges and to back-haul their dedicated fleets.

How does a broker affect good service? Most of our customers' shipments have a high consequence of failure – bad, expensive things happen if we don't deliver on time. We cannot fail our customers or their supply chains. Our proven carrier vetting process plays a huge role in achieving our excellent service record. We strive to match, and often exceed our customers' selection standards that they use to select their direct core carriers.

As a result, UTXL utilizes fewer carriers than other large brokers. Even so, our extensive database of contract carriers includes more than 500 carriers that have been licensed and safely operating for over 25 years. These carriers have an average fleet size of 35 trucks and combined assets of over 17,500 trucks. Many can provide drop trailers for loading or unloading.

Can a broker really enhance safety? In our 23-year history, there has never been a single dollar charged to any of UTXL's extensive cargo or liability insurance policies or bonds. For the few cargo claims that have occurred, each one was processed to the complete satisfaction of our shippers.

For one of our long-time customers, we have arranged door-to-door transportation of over 200,000 expedited, high-value truckloads – without a single cargo claim.

How can a resourceful broker provide responsive and dependable capacity? Small and medium-sized carriers are nimble and typically specialize in niche service lanes to get their drivers home (lower driver turnover) and their trucks maintained (fewer breakdowns). However, unlike large carriers, niche carriers have little or no sales support or TMS/EDI capabilities and are effectively "invisible" to most shippers.

A good broker efficiently connects this vast "invisible" capacity to the transportation marketplace by performing these necessary customer service activities for many carriers, as a seamless, single point of contact. Our comprehensive systems enforce compliance with all of our processes and send automated alerts if deviations occur. Management is engaged, and accessible around the clock.

For **Van or Refrigerated Pricing (full trailer or multi-stops)** visit www.UTXL.com or contact me anytime at: pschultz@UTXL.com and together, let's expedite excellence.



Vans & Reefers (teams too)



Verst

300 Shorland Drive • Walton, KY 41094
800-978-9307 • verstlogistics.com



Paul T. Verst
Chairman & CEO

Our Core Purpose:

To extend the expertise, capabilities and reach of our clients by providing logistics and packaging resources that relieve the need for operational investment, increasing speed to market and lowering costs.

Our Core Values:

Innovation
Excellence
Respect
Safety
Teamwork



We are an *Inbound Logistics* Top 100 3PL. We provide warehousing, fulfillment, transportation and packaging solutions throughout North America.

Verst Provides a Broad Portfolio of Logistics Services

WAREHOUSING & DISTRIBUTION

- Inventory Management
- Reverse Logistics/Returns Management
- 21+ Dedicated & Multi-Client Locations
- Rail Served
- Automotive, Paper, Food & Beverage, Consumer Products
- Cross Docking
- (VMI) Vendor-Managed Inventory
- Value-Added Services
- Kitting
- Pick & Pack

FULFILLMENT

- Key Midwest Transportation Corridor
- 1 – 2 Day Ground to over 85% of U.S.
- Competitive Parcel & Freight Rates
- Shopping Cart Integration
- B2B & B2C
- Over 99% Order Accuracy
- Automated Systems
- Customized Billing & KPI Reporting
- Customer Web Portal
- Low IT Startup Cost

TRANSPORTATION SERVICES

- Brokerage
- ELD Compliant
- Full Truck Load
- Expedited Reefer Service
- Load Planning
- Electronic Load Tendering
- Freight Bill Audit & Payment
- Order-to-Delivery Visibility

DEDICATED TRANSPORTATION

- Dedicated Contract Carriage
- Experienced Drivers
- GPS Tracking
- GEO Fencing
- Time Critical & Window Deliveries

CONTRACT PACKAGING

- Technology-Leading Shrink Labeling
- Largest North American Shrink Sleeve Labeler
- Bundling and Kitting
- POP Displays
- High-Impact Graphics
- Custom Packaging

INTEGRATED LOGISTICS SERVICES

- Network Design
- Modal Optimization
- Event and Returns Management
- Private Fleet Analysis
- LTL Consolidation
- Customized Invoices
- Consulting Services

TECHNOLOGY

- Integrated TMS
- Advanced WMS Software
- Best-in-Class Application Suite
- Enterprise-Class Infrastructure
- Customer Web Portal
- 24 x 7 x 365 Support
- Full EDI Capabilities
- Voice-Activated Pick Technology

Verst Logistics

Our business is . . .
an extension of your business



Wagner Logistics

1201 E. 12th Avenue • N. Kansas City, MO 64116
Sales & Marketing: 816-293-3503 • wagnerlogistics.com

Family Values – Exceptional Performance

As Wagner Logistics begins celebrating our 75th anniversary, we have been reflecting on a key principle: Every customer is a big deal, whether it's a family owned business or a Fortune 500 company. Our team of supply chain experts provides precise solutions, crafted to fit each customer's needs at the speed our customers require.

Wagner's standard of service is rooted in providing exceptional performance and a keen ability to anticipate consumer demand. Wagner continues to stay on the cutting edge by investing in and implementing automation and robotic software across our nationwide portfolio of operations. We are eager to tackle your most complex supply chain challenges. Whatever it is, whatever it takes – we say, "Bring It."

We Get It.

Wagner Logistics has been a leader in supply chain operation for over 75 years. The company began as a transportation provider. Soon after, customers began to lean on Wagner's trusted expertise for additional services including warehousing, packaging and fulfillment. This year Wagner will operate in at least 21 facilities across the U.S., transport over 63,000 shipments and fill thousands of e-commerce orders.

Wagner Logistics' strategic approach delivers legendary service and leverages cutting edge technology to continually improve supply chain visibility. Our extensive experience in distribution and transportation makes Wagner a natural strategic fit for customers seeking reliable expert partnerships within their supply chain.

Dynamic Transportation

Fortune 100 and 500 companies rely on Wagner Logistics every day.

We are quite different than your average broker:

- Trusted carrier pool
- Carrier matching and customized carrier networks
- Increase your capacity
- Consistent rates
- Drive down customer shipping costs

Bottom line, Wagner's transportation group is perfectly positioned to support customers looking to increase capacity and outsource transportation services. Wagner knows how to deploy assets to meet dedicated trucking needs and provide non-asset transportation where you need it most. Wagner is also able to drive down parcel shipping costs due to the volume we move through our growing fulfillment operations.

Contract Warehousing

We serve our customers with nearly 7 million square feet of distribution and warehouse space spanning from California to Florida. Customers rely on our expertise in network analysis and facility placement to consolidate operations, increase supply chain visibility and maximize savings.

We bring a solutions focused mindset to the table when planning a new operation or improving a current operation. Wagner understands how to transition your distribution operation when others are

failing and how to find you the space you need in a tight market. Our seasoned start-up team has seen it all. They are nimble, precise and know how to avoid the roadblocks.



WAGNERSM
LOGISTICS

Bring it.

Fulfillment

E-commerce and online retailers are constantly tweaking products and services to meet and exceed consumer expectations. Wagner Logistics opened our fulfillment operation over 25 years ago and has been a nimble partner for our customers ever since. Our strategically located fulfillment operations in the heartland allow our customers to reach over 86% of the continental US in 2 days with ease.

Now more than ever customers are ordering products online. Wagner focuses on these key areas to help your company stay ahead of consumer demand:

- Robotics
- Automation
- Savings on labor
- Streamlined process

If there is anything, we can do for you, as we say at Wagner...Bring It!



**Honored 20 years
in a row**

Wen-Parker Logistics

1975 Linden Boulevard, Suite 420 • Elmont, NY 11003
888-978-7817 • info@wen-parker.com • wen-parker.com



John Singleton
Chairman &
Chief Executive Officer

Mission Statement

To be the **RELIABLE** logistics service provider delivering **PEACE OF MIND** to our customers.

US Offices

- New York
- Los Angeles
- Miami
- Louisville
- Columbus
- Columbus (Warehouse)
- Detroit (Sales)
- Dallas (Sales)
- Boston (Sales)



The definition of **adaptability** according to *Oxford Learner's Dictionary* is the quality of being able to change or be changed in order to deal successfully with new situations. Never was adaptability more necessary than in 2020 as the world stopped to deal with an ongoing global pandemic. There are more new buzzwords in our vocabulary now that were rarely spoken previously, such as “flattening the curve”, “PPE” and “social distancing”.

While we were all social distancing by working from home, our investments in cloud-based software allowed everyone in the Wen-Parker family to stay connected with our business partners across 12 time zones as we shifted our focus to help flatten this curve. Our long-standing business relationships from all corners of the globe were needed and fully utilized to take part in a crucial mission by delivering critical PPE worldwide. While we are the go-to logistics company for the wearing apparel vertical, a quick pivot was needed from our staff and business partners to shift and adapt to the

ongoing need of critical PPE delivery.

What resulted was amazing as we delivered over 1 Billion units of PPE, enough to cover the entire US population more than 3x over!

Wen-Parker Logistics' customers have always been at the core of everything we do. We pride ourselves on being a solutions-driven organization that responds quickly to the ever-changing and increasingly-sophisticated needs of global clients both big and small. We look forward to being your first call when you need a company that delivers value, innovation and world-class global service.



Werner Enterprises/Werner Logistics

14507 Frontier Rd. • Omaha, NE 68138
800-228-2240 • werner.com



Derek Leathers

*Vice Chairman,
President and Chief
Executive Officer*

Purpose Statement

To deliver world-class supply chain solutions to the global marketplace responsibly and safely while exceeding the expectations of our customers, shareholders and associates.

Services Offered:

- Dedicated Fleets
- One-Way Truckload
- Expedited
- Intermodal
- Temperature-Controlled
- Cross-Border
- Brokerage, including Truckload, LTL and Air Freight
- Final Mile
- Freight Management

Werner Enterprises, Inc. was founded in 1956 and is a premier transportation and logistics company, with coverage throughout North America. Werner maintains its corporate headquarters in Omaha, Nebraska and maintains offices in the United States, Canada and Mexico. Werner is among the five largest truckload carriers in the United States, with a diversified portfolio of transportation services that includes dedicated; medium-to-long-haul, regional and expedited van; and temperature-controlled. The Werner Logistics portfolio includes North American truck brokerage, freight management, intermodal and final mile services.

Werner provides comprehensive solutions which are supported by leading-edge technology and top transportation professionals. Werner EDGE, the innovation arm of Werner Enterprises, advances the performance and safety of our drivers, shippers and carriers by delivering the latest technology-rich solutions in the transportation industry. Our highly trained and experienced professionals combined with our dedication to advancements in technology produce unmatched customer service.

Werner Enterprises has consistently delivered profitable financial results and takes pride in exceeding the expectations of its customers and shareholders. This commitment to financial strength results in consistent, reliable service for our customers and a transparent approach that allows for long-term success. Werner Logistics is a comprehensive Top 20 logistics provider and a key component of the company's portfolio of transportation services solutions.

A substantial focus has been placed on our 5Ts initiative. As part of these efforts, we introduced "Sustainability" as a core component of our 5Ts strategy, which includes Trucks, Trailers, Talent, Terminals and Technology. Our 5Ts strategy represents our commitment of resources to remain at the forefront of our industry. While the average age of trucks in the industry is over five years, Werner's average truck age is two years. A newer fleet means less maintenance downtime and more on-time delivery.



The 5Ts initiative is designed to maintain Werner's standard of best-in-class well into the future. Committed to conservation and sustainability, we have saved more than 307 million gallons of fuel and reduced the company's carbon footprint by more than 3.4 million tons since 2007.

In Fall 2020, Werner announced their Environmental, Social and Governance (ESG) program. While ESG concepts have long been woven into the fabric of Werner's history, these initiatives were developed to better communicate Werner's ESG progress to associates, customers, shareholders, suppliers and the general public, as well as identifying new areas of focus for further improvement. Werner's ESG initiatives include sharing with its stakeholders the impactful progress Werner has already achieved and its future specific milestone goals. In addition to providing resources to support these future ESG efforts, Werner will produce regular progress reports to ensure it is accountable for progress going forward. Werner commits to being transparent by updating all of its stakeholders on its ESG journey by publishing an inaugural Corporate Social Responsibility Report in 2021.

Werner also developed the first truck driver apprenticeship program in the industry that was approved by the Department of Labor and the Department of Veterans Affairs. We are a proud supporter of military veterans and veteran spouses, who comprise approximately 20% of the company's workforce.

Beyond the Assets

With 65 years in business, Werner maintains a strong financial condition with low debt. Werner has consistently produced profitable financial results, a solid financial position and is publicly traded on NASDAQ under the symbol WERN.

WERNER
LOGISTICS

WSI

1160 Mayflower Drive • Appleton, WI 54913 • 920-831-3700
Solutions@wsinc.com • wsinc.com



Paul Simmons
COO

Mission Statement

WSI is committed to being the premier provider of supply chain solutions in North America.

We believe premier means providing **Absolute Reliability** in our service and **Best Overall Value** to our clients, while providing a positive and safe working environment for employees.

Services

- Warehousing & Distribution
- Fulfillment
- Chemical Logistics
- Transportation
- Transloading
- Import/Export



For over 50 years, WSI has helped customers succeed with reliable, integrated third-party logistics services. As one of the largest privately held logistics companies in the U.S., WSI spans a nationwide distribution network with global logistics reach. WSI has expertise in warehousing, transportation, and fulfillment of goods in every industry—with the right people, processes, and technology to meet your supply chain needs.

Tailored End-to-End Supply Chain Solutions

WSI supports customers with reliable, fully integrated logistics solutions that free them to focus on running their business. Wherever the challenges or opportunities in your supply chain reside—improving delivery schedules, reducing costs, minimizing damage claims—WSI can tailor a logistics solution to your specific needs. We are solution oriented and data driven, using the most advanced operational methods and technologies to ensure your supply chain runs smoothly. Services include: transportation & transload, fulfillment, chemical warehousing and handling, import/export, distribution & warehousing, contract services, and logistics technology.

National Distribution & Fulfillment Network

Strategically positioned, WSI operates 40-plus campuses, totaling 15 million square feet, across North America in major

metropolitan areas and transportation hubs. This means wherever you need your product, from California to Pennsylvania (or both!), WSI has a solution to meet your needs.

Chemical Logistics

As a chemical logistics provider to some of the top chemical companies worldwide, WSI has extensive experience safely and efficiently handling hazardous and non-hazardous materials in numerous chemical sectors, most recently agricultural chemical. An American Chemistry Council Responsible Care® partner, with FTZ designation, WSI has a comprehensive lineup of chemical services giving the power to be your one-source provider.

Fulfillment

WSI offers specialized fulfillment services for B2B and B2C. Most orders we receive can be picked, packed and shipped same day. Reliable product delivery has a direct impact on your brand. From order to delivery, WSI supports customers with a broad range of seamless fulfillment solutions that allow you to focus on day-to-day business.

Absolute Reliability™

Our clients will tell you that we stand out due to our ability to deliver—We conduct business with integrity. We approach every day with the goal of Absolute Reliability™. We treat our employees fairly and give charitably to the communities we serve.



Advertiser Index

COMPANY	AD PAGE	PROFILE
3PL Central	–	296
A.N. Deringer	99	297
A3 Freight Payment	283	298
Alliance Shippers Inc.	81	299
Alpega	15	300
Approved Freight Forwarders	25	301
Aptitive	75	302
AR Traffic Consultants	222	303
Arcosa	9	304
Atlanta Bonded Warehouse	147	305
Atlantic Container Line	83	306
Bender Group	221	307
Brothers Freight Management	229	308
C.L. Services	245	309
Cass Information Systems .	33	310
CenterPoint	145	311
CFI	104	312
Corporate Traffic Logistics	121	313
COSCO SHIPPING Lines (North America)	153	314
CT Logistics	252	315
CTSI-Global	171	316

COMPANY	AD PAGE	PROFILE
DAT	129	317
DCG Fulfillment	97	318
DDC FPO	69	319
Descartes Systems Group	89	320
DF Young	143	321
Distribution Technology	133	322
DSC Logistics, now CJ Logistics America	17	323
Echo Global Logistics	108, Cover 4	324
ElectriCities of North Carolina	165	325
ELM Global Logistics	292	326
Engineering Innovation	72	327
enVista	Cover 3	328
eShipping	–	329
Evans Distribution Systems	111	330
Evergreen Line	–	331
Express Carriers Association	285	–
Fortigo	281	332
Freight Management	56, 137	333
Generix Group North America	59	334
GEODIS	3	335
Georgia Ports Authority	173	336

Advertiser Index

COMPANY	AD PAGE	PROFILE
GlobalTranz	49	337
Gulf Winds	291	338
Holman Logistics	39, 106	339
Hoosier Energy	205	340
Hopewell Logistics	73	341
Hub Group	63, 107	342
ID Logistics	74	343
iGPS Logistics	211	344
Intelligent Audit	68	345
ITOrizon	66	–
ITS Logistics	161	346
Kenco	5	347
Lily Transportation Corp.	235	348
Logistical Labs	62	349
Logistics Plus	195	350
Logistix Company, The	179	351
Lynden	7	352
MagicLogic Optimization	203	353
Mainfreight	137	354
Mantis	–	355
Maryland Port Administration	91	356

COMPANY	AD PAGE	PROFILE
MD Logistics	109, 209	357
Merit Logistics	233	358
MHI	13, 60, 271	359
Mitco Global Logistics	100	360
MPO	70	361
New York Fulfillment	–	362
North Carolina State Ports Authority	191	363
Northwest Seaport Alliance	231	364
Nulogy	21	365
nVision Global	67, 93	366
Odyssey	11	367
Penske Logistics	53	368
Performance Team – A Maersk Company	155	369
Pharr International Bridge	159	370
Phoenix Logistics	57, 115	371
PITT OHIO	103, 215	372
Polaris Transportation Group	125	373
Port Logistics Group	51	374
Port of Galveston/Galveston Wharves	31, 50	375
Port of Long Beach	243	376
Port of Los Angeles	237	377

Advertiser Index

COMPANY	AD PAGE	PROFILE
Port Tampa Bay	71	378
ProTrans	41	379
PSS Distribution Services	123	380
R2 Logistics	139	381
RateLinx	141	382
Red Classic	87	383
RedStone Logistics	102, 239	384
Rinchem Company	79	385
RMX	185	386
Romark Logistics	77	387
Ruan	43	388
Saddle Creek Logistics Services	135	389
SEKO Logistics	110, 247	390
Shippers Group, The	197	391
SMC ³	27	392
Sunland Logistics Solutions	200	393
Sunset Transportation	119	394
Syfan Logistics	44-45	395

COMPANY	AD PAGE	PROFILE
Symbia Logistics	19	396
Taylor Services	Cover 2	397
TForce Worldwide	23	398
TransGroup Global Logistics	37	399
Transporeon	58	400
Transport America	–	401
TransportGistics	199	402
Trinity Logistics	61	403
TST Logistics	256	404
U.S. Bank Global Transportation Payment Solutions	35	405
UCBOS Inc.	65	406
UniGroup Logistics	85	407
UTXL	54	408
Verst	105, 163	409
Wagner Logistics	169	410
Wen-Parker Logistics	225	411
Werner Enterprises/Werner Logistics	213	412
WSI	47	413

Maximize Global Transportation Results

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- TMS Selection & Implementation
- Fleet Solutions
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- EDI/Trading Partner Management
- Proactive Analytics



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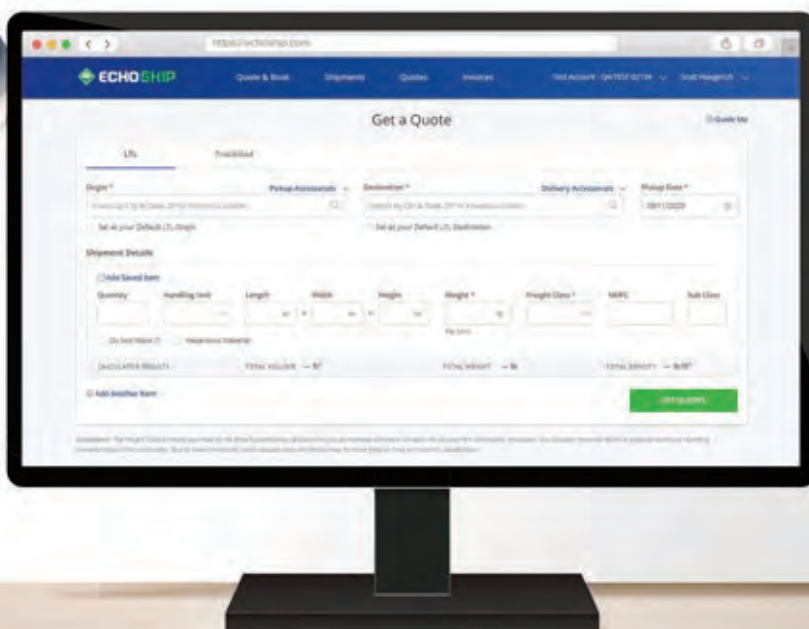
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