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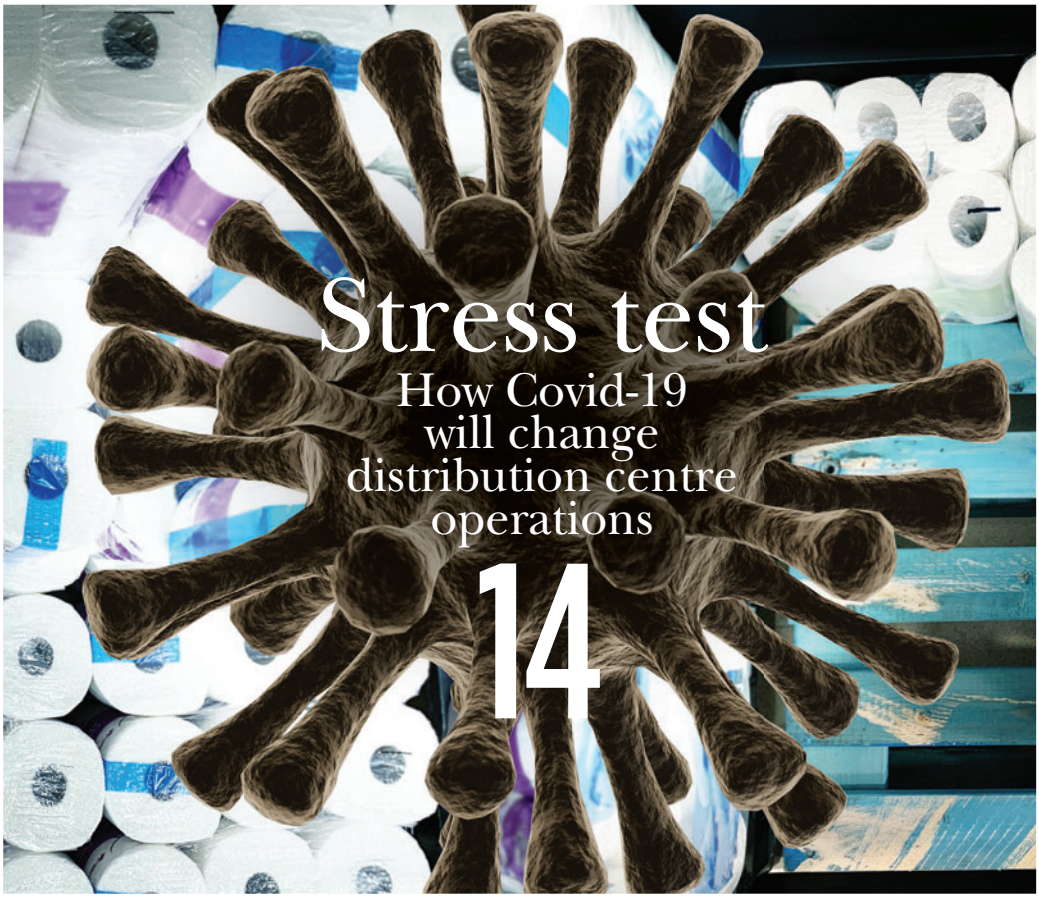
JUNE 2020 • VOLUME 65 • NUMBER 03



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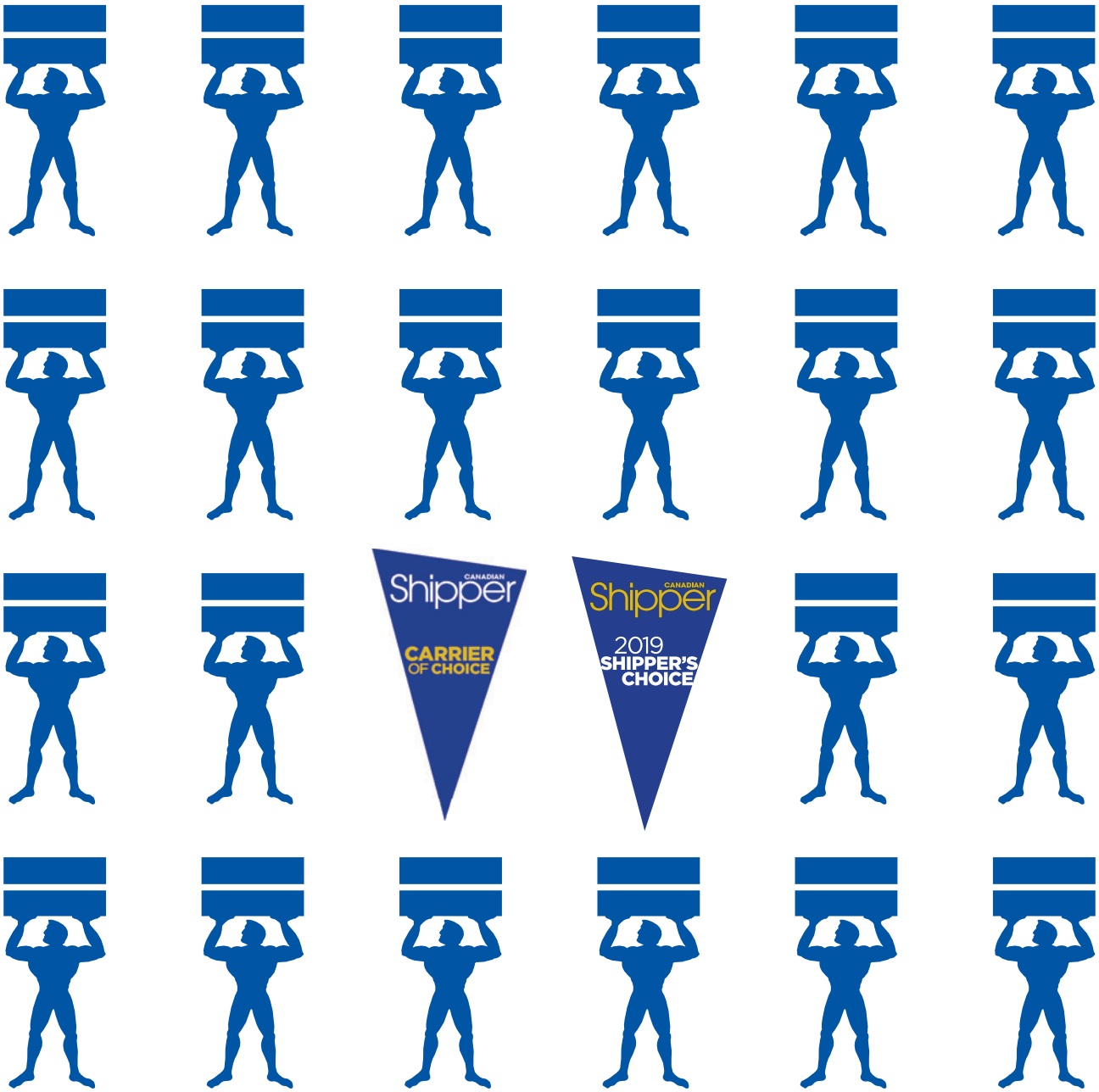

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Inside Logistics, established in 1956, is published six times a year by Newcom Media Inc.

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SUBSCRIPTION PRICE PER YEAR
Canada $84.95 per year, Outside Canada $159.95 US per year. Single copy price: Canada $15.00, Outside Canada CA$32.65 Inside Logistics is published six times per year except for occasional combined, expanded or premium issues, which count as two subscription issues.

PRINTED IN CANADA
Publications Mail Agreement #43008019,
ISSN: 0025-5343 (Print) ISSN: 1929-6460 (Digital).

Inside Logistics is indexed in the Canadian Magazine Index by Micromedia Limited. Back copies are available in microform from Macromedia Ltd., 158 Pearl St., Toronto, ON M5H 1L3

NEWCOM MEDIA INC.

FUNDED BY THE GOVERNMENT OF CANADA Canada

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United we stand

HOW THE WORLD HAS CHANGED since I last wrote in this space. By the time you read this it will be about three months since the Covid-19 pandemic was declared, with the resulting shutdowns challenging the very foundations of global supply chains.

We are all learning to manage through the surprises of working from home, video calls in our work tops and PJ bottoms, physical distancing, and the wildly oscillating conditions of supply and demand for basics and important items like personal protective gear.

At this time of profound disruption it has never been more important to have a trusted source of information about your industry. And while we are practicing physical and social distancing, when it comes to all the news and analysis for Canadian supply chain operations, we've now brought it together into one authoritative publication.

Canadian Shipper has joined *Inside Logistics* to create the only Canadian source of complete end-to-end supply chain news and analysis. The combined publication, which has the largest audited circulation in our market, will have a strong focus on warehousing and distribution operations, along with all modes of transportation. It's written for shippers, and now will include stories on transportation services, trade, and forwarding alongside the distribution centre, intralogistics and inventory control stories you are used to seeing in *Inside Logistics*.

Along with the combined print publication, which will continue to be published every other month, the *Canadian Shipper* digital archives will be folded into the *Inside Logistics* website and, as you have likely already noticed, the twice-weekly e-newsletters have also been integrated.

As the editorial leader of this fresh, larger enterprise, I will endeavour to continue delivering the best, most comprehensive supply chain news to you. Covering the freight transportation marketplace is nothing new for me. As editor of *CargoNews Asia* out of Hong Kong back in 2001, I managed it through the transportation crisis that followed the 9/11 terror attacks.

So, welcome to the *Canadian Shipper* readers who have joined us; I look forward to hearing from you. As always, I welcome your thoughts, comments and story ideas about how the pandemic has disrupted, and possibly improved, your businesses and decision making. Please drop me a note at emily@newcom.ca or look me up on LinkedIn.

Emily Atkins

CHECK OUT OUR LOOK AT THE FUTURE OF AIR CARGO ON PAGE 30.

7 ways the pandemic will change supply chain management

BUSINESS AS USUAL will never be the same. As the Covid-19 pandemic has unfolded there has been a lot of speculation about what the 'new normal' will look like. Here are some themes emerging as supply chain operations adjust to the new 'pandemic setting'.

Shorter supply chains. Manufacturing will be on-shored or near-shored to reduce reliance on long, potentially breakable, global supply lines. A whopping 64 percent of manufacturers reported in April they are likely to bring manufacturing production and sourcing back to North America – a 10 percent increase from a month earlier, says a survey of 1,000 North American manufacturers produced by Thomas.

According to Rich Thompson, JLL's international director, supply chain and logistics solutions, there will be a big move away from manufacturing in China. With every Fortune 500 company dependent on either a Tier One or Tier Two plant there, they were strongly affected by the pandemic-caused shutdown. Now, he says, they will be looking to diversify away, intensifying a trend that has been underway for several years.

Inventory will increase as companies build emergency stocks. The just-in-time, Toyota production model (TPPM) will be less popular, and companies will keep larger safety stocks on hand to smooth out supply disruptions. According to Paul Larson, whose full analysis appears on page 13, "logisticians should build safety stock equal to demand during lead-time for the important items."

Warehouses will get bigger. As a result of rising inventories and the need to ensure social distance between workers, warehouses will need to become bigger to accommodate larger safety stocks. This may put even more pressure on the overheated large-DC market. E-commerce will increase demand for supersize fulfillment centres, over 500,000 square feet, says Craig Meyer, JLL's president, industrial brokerage.

Martin McVicar, CEO of Irish narrow-aisle forklift manufacturer Combilift says inquiries for quotes doubled in the four weeks up to the third week of May. "Some customers are screaming for a quick fix," McVicar said. "Demand for space has never been at such a high level, as Covid-19 is driving space constraints."

Manufacturers are looking for ways to increase their production space in order to comply with social distancing rules as economies around the world begin to reopen after pandemic-forced shutdowns. McVicar says manufacturers with typical production facilities are looking for ways to reduce the space allocated to storage both pre- and post-production, and those who might have been considering a narrow-aisle solution suddenly see that it could be the answer to maintaining production levels.

Automation and digitization will become even more interesting to larger companies, to militate against labour shortages. A new survey shows one in four North American manufacturers is considering expanding industrial automation as a result of Covid-19, while an additional 20 percent report they already have systems in place.

"The Covid-19 pandemic will fundamentally redefine how industrial companies approach their supply chains and will further advance the digital transformation of manufacturing," says Tony Uphoff, president and CEO of Thomas, which commissioned the study.

E-commerce will continue to boom, with more attention paid to scalability to meet fluctuations in demand. Driven to new heights thanks to pandemic lockdowns, "online market share will be more like 20 percent in 2020, instead of the projected 13 percent," says JLL's Meyer. "It's an inexorable, long-term trend. E-commerce is here to stay."

Network re-design. With re-shoring, more inventory, and changing demand for space alongside growth in e-commerce, and the growing trend to use of automation in warehousing, it is inevitable that existing networks will have to be reconsidered. "Most corporate occupiers expect major changes in their domestic networks over the next 18 months," says JLL's Thompson. "Companies need more facilities and closer to their customers." This will drive changes in transportation patterns, real estate demand and labour uptake as companies seek to optimize cost and service while minimizing risk, he says.

Risk management will be a hot topic again. In the U.S., a bill has been proposed that would allow the federal government to help businesses obtain insurance coverage against pandemic risk. The new measure would require insurance companies to offer policies that cover pandemics but would create a federal backstop program. IL

VUCA – A new acronym for the pandemic

How you can thrive on volatility, uncertainty, complexity and ambiguity

THE TERM VUCA stands for Volatility, Uncertainty, Complexity and Ambiguity – four horsemen that make supply chain management a real challenge.

Jim Tompkins, founder and chairperson of Tompkins International, recently spoke (in a webinar called "VUCA: How do we get back to better"), about how the four variables interact and how organizations might want to act to mitigate the disaster.

First he explained each of the terms.

Volatility is the speed of change and the frequency of change, whether natural or self-induced. Uncertainty is lack of predictability, which makes it impossible to define requirements. When you cannot define what you need to succeed, it is then also impossible to optimize operations.

Complexity is the multitude of forces and confounding issues and the blurring of roles. Ambiguity is haziness, the inability to get a good read on a situation because it is in flux.

Right now two types of disruption are upsetting the world, innovation and crisis. Innovation disruption is the normal cycle of new product and service development, while crisis disruption is the kind of 'black swan' event that we are facing with the Covid-19 pandemic. Nobody saw it coming and it has "massive transformational impact".

"We're doing a record innovative disruption and a record crisis disruption at the same time," Tompkins said. "It's VUCA on steroids."

He explained what organizations can do under these circumstances: reinvent and adapt, calling for "optionality not optimality". Optionality means creating numerous scenarios and being able to pivot among them as circumstances dictate.

VUCA means predicting the future is impossible. In a normal network design initiative managers would look at four- to five-year requirements, capital expenditures and so on and optimize the operation to meet expected requirements. In other words, designing to demand plans.

However, if you don't know the requirements, you cannot optimize the equation. "The best you can do is define a set of different scenarios and define what is optimal for each," Tompkins said.

Then you need real-time visibility into what's going on throughout the network so you can instantly pivot to whichever of the scenarios is taking place. It is a fundamental shift in the way supply chains are planned, Tompkins concluded. IL

To mask or not to mask

Keeping up with health & safety best practices

THE HUMBLE FACE MASK has become a hot topic as warehouses and distribution centres – and other workplaces – seek to keep workers safe from the coronavirus.

As the Covid-19 pandemic has evolved, so too has advice on whether protective face coverings are a help or a hindrance. At first we were told they were useless or dangerous; now that thinking has evolved to a recommendation that face coverings be worn when a physical distance of two metres or more cannot be maintained, whether at work or out in the community.

The Canadian Centre of Occupational Health and Safety (CCOHS), a federal agency, has issued a series of fact sheets, protocols, links to provincial resources, and other information to help guide best practices. The tools can be found, free of charge, at www.cohs.ca.

Supply chain operations

We spoke to several Canadian organizations ranging from SMEs to the biggest of them all – Amazon – to find out how they are managing infection prevention as they continue or return to work.

At sporting goods distributor Mizuno Canada Ltd. the four staff in the 28,500-square-foot warehouse are back on the job full time, said president John Stacey. Office staff work from home.

Because of the size of the warehouse, they are easily able to keep the required two metres apart, and have sanitizer, masks and gloves on hand should closer contact be required. As part of their protocol every shipment in and out is being recorded should any cases of Covid-19 need to be tracked.

Ontario's Liquor Control Board (LCBO), has experienced increased demand for alcoholic beverages through the pandemic. According to Nick Nanos, LCBO's senior vice-president, supply chain and wholesale, keeping up was critical, and ensuring the safety of workers at its distribution centres was key to maintaining operations.

"In addition to a series of health and safety measures...our employees are provided face shields and have the option to wear non-medical face masks," Nanos said. "Store workers wear them and in the warehouses it's more on the basis of the role and situation. If you're at the end of a line where there's manual palletization or in a jackpot or hospital lanes, people wear them, or in the pick mods. It really depends on what they're doing."

Giant Tiger has opted to make face masks mandatory at all stores, within distribution centres, and for its truck drivers whenever they are outside of the truck. The company is providing employees with a choice of disposable masks, reusable masks and face shields and has provided training on their proper use and importance. Another protocol is health screenings and temperature checks.

"All of the measures put in place, including heightened cleaning and sanitization, physical distancing measures and more, have all been done for the health and safety of our people, their families and our communities," said Jess Godin, the company's senior vice-president, supply chain. "We recognize that this situation is very fluid and are focused on adapting as the climate changes and as further information from health officials becomes available."

In March, Polaris Transportation Group had some challenges procuring hand sanitizer, gloves and masks. However, since April the company has had a good supply and is now ordering regularly to ensure there is inventory at hand.

Drivers and front-line workers have been provided protective eye wear, gloves and sanitizer with the addition of face shields, and have been trained on how to use and dispose of the PPE properly. Additional training will be provided on an on-going basis as required. All touch points of the trucks, inside equipment and in the office are being sanitized after each use. All interchange areas are also under Covid-19 protocols, meaning two-metre distancing, protective eye wear, gloves and masks.

Polaris Transportation Group driver Francis is ready for work in his PPE.

"Our plan is to keep up these safety practices until we have a vaccine for Covid-19," said president Dave Cox.

Gap Inc. has put measures in place, as recommended by the World Health Organization (WHO), to keep facilities clean and help employees stay healthy and physically distanced.

"We provide single-use non-medical masks for all distribution centre workers and, in Brampton, we mandate their use in specific parts of the distribution centre, like those managing our pick modules," said Terry Fisch, Gap's senior director, Canada - retail & e-commerce logistics. "All employees must wash their hands and undergo a temperature check before passing through security." Gap is reviewing these protocols regularly and modifies them as needed.

Amazon recently announced that as part of a US$4 billion Covid-19 response plan it has spent $800 million on health and safety measures in its fulfillment centres in the first six months of the year. These include thermal screening and disinfectant spraying, reconfiguring break rooms, physical distancing and mandatory masks. IL

photo: Polaris Transportation

MOVERS + SHAKERS

United Natural Foods, Inc. has named **Stacey Kravitz** the new president of UNFI Canada, effective August 2, 2020. Kravitz, who currently serves as Canada's senior vice-president of sales, takes over as **Peter Brennan**, UNFI Canada's current president, prepares for retirement. With more than 25 years in progressive high-profile leadership positions within sales at Kraft Foods, then Kraft Heinz Company and UNFI Canada, Kravitz has received numerous awards. In May 2019, she was elected to the board of directors of the Canadian Health Food Association (CHFA) and chairs CHFA's HR committee. She is a graduate of McGill University and the Queens and Ivey Executive Program.

Jonathan Dawley takes over as president and CEO of **Kion North America** on May 18, 2020. He succeeds **Vincent Halma**, who has left the company. Dawley comes from Putzmeister Holding GmbH, a subsidiary of Sany Heavy Industry Corporation, where he was head of the Americas region for over two years. Between 2014 and 2018, he was responsible for the global aftermarket business at JLG Industries Corporation, a subsidiary of Oshkosh Corporation. He also held senior management roles at Hyster-Yale Materials Handling Corporation from 2005 to 2014. Dawley studied business administration at Baker College in Auburn Hills, Michigan.

Joseph "Joe" Dzierzawski has been named president and CEO of **Beumer Corporation**. Dzierzawski will be fully responsible for the business of Beumer Group in the North American market. A graduate of the University of Michigan, with a degree in metallurgical engineering, Dzierzawski has attended executive management programs at the University of Michigan School of Business and INSEAD in France. He joins Beumer from Hatch Metals & Minerals group where he served as global director, technology and business development. He was previously at SMS, where he was most recently president and CEO for SMS USA and CTO for SMS Group, Inc.

C.H. Robinson executive chairman **John Wiehoff** has retired from the company's board of directors. Wiehoff has been a director of the company since 2001. He served as CEO of C.H. Robinson from May 2002 to May 2019 and became chairman in January 2007. Previous positions with the company include senior vice-president, CFO, treasurer and corporate controller. Before that, Wiehoff was employed by Arthur Andersen LLP. He also serves on the board of Polaris Inc., Donaldson Company, Inc. and U.S. Bancorp.

Marie Robinson has joined **Sysco Corporation** as executive vice-president and chief supply chain officer. Before joining Sysco, Robinson was senior vice-president, chief operations and transformation officer for Capri Holding Limited, the parent holding company of Michael Kors, Versace and Jimmy Choo. She also had roles with ToysRUs, The Great Atlantic & Pacific Tea Company, Smart & Final Stores, LLC and Wal-Mart Stores, Inc. She began her career as a logistics officer for the U.S. Army.

Can't stop the signal

Device management matters

EFFORTS TO KEEP WORKERS off their phones might just be keeping quality workers out of warehouses, according to Ian MacKenzie, head of logistics and distribution at BAST Fiber Tech.

With an average turnover rate of 20 percent, it's hard enough to keep workers engaged in the industry, and asking the most tech-savvy generation in history to pack away their phones can be a barrier to hiring quality staff. After all, "pick and pack is only so engaging after the first hour," MacKenzie says.

MacKenzie sees value in allowing employees to use their own devices at work, and advocates incorporating personal devices into the workflow. "It might be the difference between an employee staying in the position you've offered versus a competitor."

Millennials are also used to quickly adapting to new tech on their devices. "I've got a pretrained audience. I don't have to spend a week in a room with an RF gun and walk them through screens. I can hand them an app or a phone preloaded with my software on it, and within an hour they can probably show me stuff I couldn't do before!"

Some systems for managing device control are punitive, like one called Payphone Timekeeper. It clocks workers off payroll workers when they use their devices.

MacKenzie says behavioural apps such as Forest have the most impact on reducing cell phone use. It allows workers to set time goals and shows a small plant that grows into a forest of trees when people stay off their phones.

If you miss your goal, or check your phone too much, you kill your tree. If you grow enough trees the app provider will plant a real tree on your behalf.

It's easy to focus on mobile devices, but MacKenzie says the real answer to a successful operation is cultural. "At the end of the day, devices aren't the only source of lost productivity or distraction. It's about managing behaviours. That's what our roles as supervisors has become. Hire attitude and effort over skills and the tide will rise on culture." IL

Ian MacKenzie

photo: Jacob Black

Researchers develop app to keep truck drivers safe

Geofencing allows trucks to be automatically directed to dock doors

RESEARCHERS AT Conestoga College in Kitchener, Ontario, are building a mobile software application that will help critical supply chain workers maintain physical distancing during the Covid-19 pandemic.

The prototype is being developed by researchers at the college's SMART (Smart Manufacturing and Advanced Recycling Technologies) Centre in collaboration with Kitchener-based Conestoga Cold Storage (CCS).

Each day, hundreds of truck drivers, now deemed essential workers, move between the company's facilities, hauling frozen food and other goods across the country. The new software application will allow drivers to remain in their trucks and avoid face-to-face contact when arriving at a CCS facility.

"Working in collaboration with CCS programmers, we have built an application that uses the concept of geofencing to monitor truck drivers as they approach CCS facilities," said principal investigator Russell Foubert.

"By using GPS or cellular data, the system can track drivers to understand when their trucks are within the appropriate range, then issue door assignments to drivers through a mobile check-in process, eliminating the need for them to enter the building."

Student researchers Taylor Beck and Travis Roy from Conestoga's Software Engineering Technology program have been working on the project since January 2020, before the Covid-19 pandemic reached North America; however, there's a new sense of urgency to deliver the prototype.

"Our cold storage facilities provide a critical service to food manufacturers across the country. The current situation has highlighted the importance of keeping Canada's food supply chain up and running so deliveries to grocery stores can continue uninterrupted," said Gavin Sargeant, vice-president of CCS.

"If we can eliminate the need for truck drivers to park in our yards and enter our offices to do paperwork, we can reduce the risk to workers while also making our operations more efficient."

CCS hoped to have some of their drivers using the mobile software application by the end of May.

Researchers are also discussing potential opportunities to further enhance the system.

"We're exploring how this technology could be used to automate more of the process," explained Foubert. IL

Is JIT out of time?

On a chilly, sunny April morning in Winnipeg, the author was sent to a nearby store to buy toilet paper, just-in-time. The aisle dedicated to paper products was barren. Such a stunning, sudden logistics service breakdown!

Logistics and JIT

Stated most simply, logistics is the management of inventory, in motion and at rest, to serve customers. Transportation and warehousing are the primary logistics functions involved in the motion and rest part of the equation. Logistics managers balance customer service and total costs. The beauty of just-in-time (JIT) is its promise to maintain service with lower inventory levels – and lower costs.

But JIT is built on the assumption of stability, i.e. level demand and short, reliable lead times. However, sudden supply chain disruptions, such as fires, floods or pandemics, bring instability. Demand surges for certain essential items – and plummets for others. Upstream shortages mean longer, less reliable lead times. Forward buying – sometimes known as panic buying – involves purchasing volumes in excess of typical demand. It is triggered by anticipation of impending shortages or rising prices. Erratic demand and unreliable delivery invalidate the assumptions enabling JIT.

What's a logistician to do?

First, reduce upstream lead time and lead time variability. This might mean moving to multiple sourcing and/or local sourcing. During a disruption, distant, single sources are risky in terms of lead time. Local sources are likely able to respond more quickly.

Second, anticipate volatility. Of course, some disasters cannot be anticipated. What about the coronavirus pandemic? On January 30, the World Health Organization (WHO) declared a global public health emergency. The very next day, the U.S. blocked foreign nationals who had been in China within the previous two weeks from entering. How many supply chain managers in JIT operations anticipated the coming volatility in both lead time and demand? How many placed orders for critical inventory items?

Moving forward, logistics managers are advised to partition their inventory items, based on importance and volatility of supply and/or demand. Often item importance is based on annual volume multiplied by dollar value. So, a million-dollar item with volume of one is just as important as a $1.00 item with a one million-unit volume. However, there is more to item importance than volume X value. If an absence of light bulbs or protective gloves shuts the operation down or endangers employees, those items are important, irrespective of volume

and value. If a stock-out means losing customers (or employees) forever, the item is important.

If a disaster is anticipated, logisticians should build safety stock equal to at least demand during lead time for the important items. So, if expected lead time is 50 days and daily demand is 100 units, hold 5,000 units in stock. These items could be warehoused in a centralized location, as long as fast transport is available when needed.

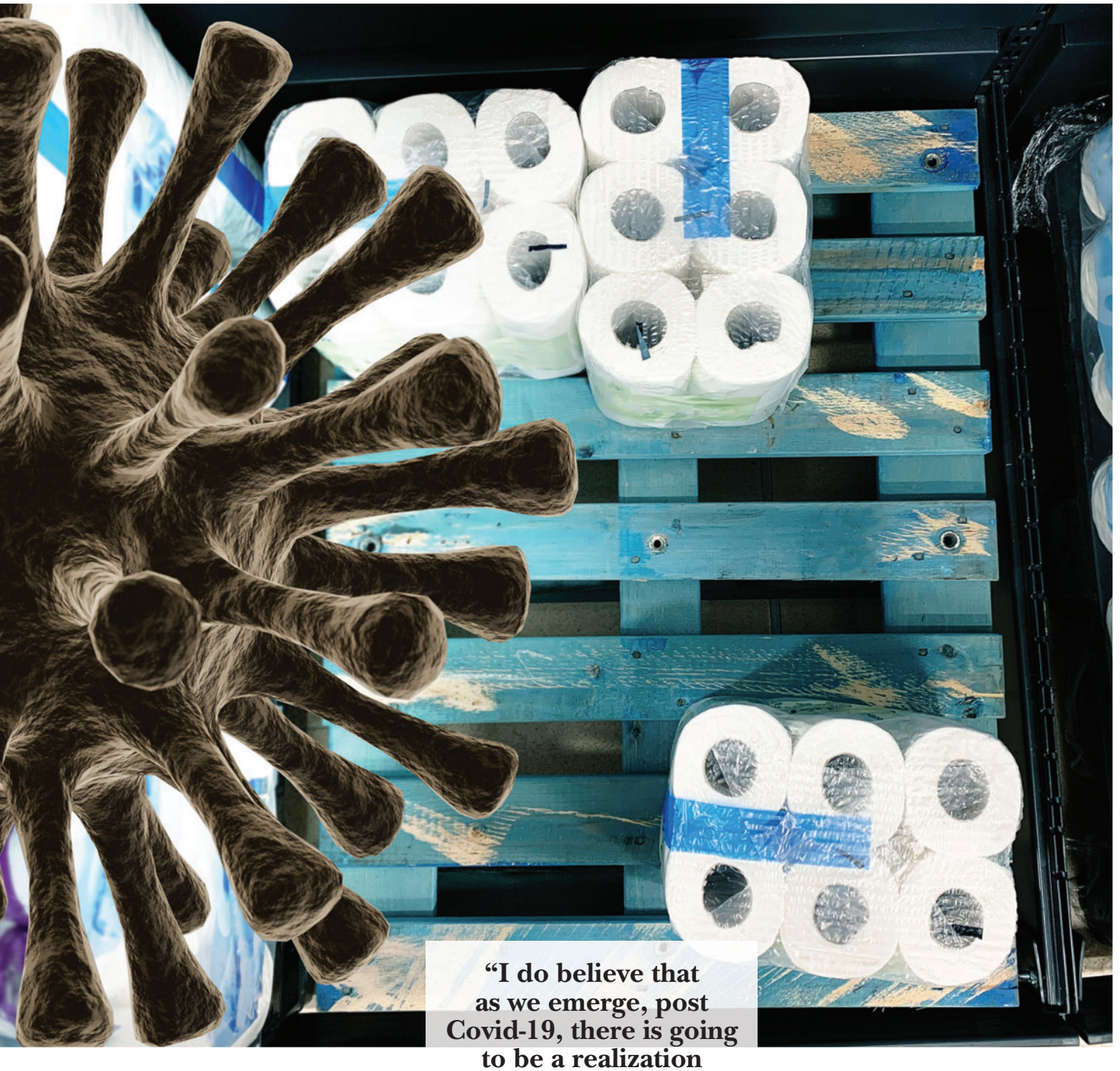
It's about time

Is JIT out of time? No, but it is about time! JIT is making and moving things just as needed. It has always been about time – and it still is. It's about reducing lead time, but also about understanding determinants of lead time. In a world of volatility, JIT can no longer assume stability. Today, in Winnipeg, there is an ample supply of toilet paper on store shelves once again – and a two-month supply in the author's basement, just-in-case. IL

Paul Larson is CN Professor of SCM at the University of Manitoba

THE BIG **STRESS** TEST

The **Covid-19 pandemic** is causing unprecedented disruption to global supply chains. It is also providing a rare window into the future.



> **"I do believe that as we emerge, post Covid-19, there is going to be a realization across every industry how fragile and yet critical supply chains are."**
>
> *– Jeanette Barlow, IBM Sterling Supply Chain Solutions*

One of the many realizations from the Covid-19 pandemic is that our supply chains are a matter of life and death for many Canadians.

"I do think most companies and most supply chain leaders take this very seriously," says Jeanette Barlow, vice-president, strategy and offering management, IBM Sterling Supply Chain Solutions, "and I do believe that as we emerge, post Covid-19, there is going to be a realization across every industry how fragile and yet critical supply chains are."

"The word supply chain was never a ubiquitous word until this Covid pandemic," says Robert Martichenko, founder and CEO of LeanCor Supply Chain Group. "Now everybody's heard the term supply chain."

The crisis finds many supply chain managers in firefighting mode as they adjust to the upending of retail shopping by stay-at-home mandates. Emergency home and curbside delivery setups have instantly

continued on page 16

Images: MarioGuti, iStockimages.com

transformed e-commerce from a convenience option to the predominant delivery method for groceries, hardware, office supplies and other verticals – a stage that wasn't expected until years down the road.

"If you look at forecasts for where online grocery is going to go over the next two, five and 10 years, we just got a big stress test to the fulfillment systems and online capacity," says Vince Martinelli, head of product and marketing, RightHand Robotics Inc. "It's like we jumped ahead five years overnight."

Simultaneously, supply chains are facing staffing shortages and unprecedented demand volatility.

"We've seen the whole gamut," says Russell Kushner, senior engagement director, professional services at supply chain software provider Manhattan Associates. "We've seen folks that have their DCs go to almost zero volume overnight because their stores are closed. We've also seen people with major spikes."

"It's an odd time where certain things are moving at a hundred miles an hour, some things have come to a grinding halt, and others are, somewhere in between where they could accelerate or decelerate on a day's notice," Martinelli says.

Getting in focus

Many of the most visible problems, however, are not really shortcomings in the supply chain. The toilet paper fiasco, for example, occurred because consumers, afraid stores would close, began hoarding, causing widespread stock-outs. Shortages of masks and sanitizing wipes stem from manufacturing capacity issues.

Relative to a healthcare crisis, therefore, it's unfair to attribute these problems to poor supply chain management. "We shouldn't hold them accountable," says Martichenko. "From a supply chain perspective, it's not possible to know what to store, how much to store, where to store it."

What's needed is a broader way of looking at the many variables that can adversely affect a supply chain.

"Supply chain risk traditionally meant was 'what is our risk of supply being interrupted?'" says Martichenko. "But what we've realized with Covid is that it wasn't about interruption – it was about demand for some companies going through the roof, and for others, demand just dropping. So the supply chain wasn't interrupted at all – the interruption was a function of demand."

"Covid...was about demand for some companies going through the roof, and for others, demand just dropping. So the supply chain wasn't interrupted at all – the interruption was a function of demand."

– Robert Martichenko, LeanCor Supply Chain Group

The question, therefore, is not "how can we make sure we have enough hand sanitizers?" but "how can we prepare so that we can quickly adjust to dramatically different circumstances?"

Tagging onto existing trends

Fortunately, the adaptive supply chain has been in the works for some time. The conversion of retail outlets to curbside pickup points, for example, leverages existing tiered network strategies where large DCs are supplemented by micro-fulfillment centres that provide same-day delivery of high-demand items to urban customers.

"I think what we've been seeing is a shift in facility automation and process flow," says Crystal Parrott, vice-president of customer service at software provider and system integrator Dematic. "Traditionally you'd have big DCs and they would send to the stores. What you're seeing now is the move to a lot of smaller hubs closer and closer to the customer. You're not eliminating the DC, but you've got the instant order facilities that have to be closer."

To achieve this, many companies will have to upgrade their data-handling capabilities. "The challenge has been, I believe, that there's so much data that you have to pull together," Barlow notes. "It's easier to do that within your swim lanes of particular processes, but to get that end-to-end view, you really have to be able to look across your own internal systems."

A key advantage of this multi-layered distribution model is that it provides a degree of flexibility that many traditional retail networks have lacked. "That's a sophisticated network of stuff to manage," says Martinelli, "making sure you know where all the inventory and resources are – but it gives you a lot of flexibility to adapt as the demand bounces between the different ways that people may want to buy and receive things."

Some companies are finding that they are already equipped for this, at least from a data perspective. "The customers that we see as the most able to react have flexibility built into their systems," says Kushner. "We had a customer that was actually able to turn their stores into fulfillment centres in under two weeks."

Coping with volatility

The crisis has also forced companies to adjust instantly to huge spikes in demand. By way of comparison, Martinelli points out, companies spend months planning for the holiday rush. "As warehouses get ready for Christmas peak and the holidays, they don't wait until Black Friday to see how facilities operate and how the systems are going to hold up," says Martinelli. "They usually do stress testing in June."

Artificial intelligence is raising the bar here. Control tower technology, which monitors conditions and events across complex supply chains, can enable a decision maker to adjust to a pending shortage, or re-direct shipments to meet a spike in demand. Machine learning systems can evaluate multiple delivery models, automating a chore that would otherwise take months of work.

"Most companies have found an inventory model that fits their demand profile best," says Kushner. "They might, on an annual basis or every quarter, review it and ensure that they're using the right model. But when you get these completely out-of-the-blue changes in demand, your inventory model could potentially lag. So having systems that can evaluate multiple models in real time and adjust them is, I think, really critical."

"It's like an air traffic control mentality," says Martichenko, "and I think organizations are going to be embracing that so they get the visibility they need, so they'll have the capability and the resilience to see through these emergency events."

Handling the goods

The crisis has also highlighted how quickly robots have established themselves in warehouses and distribution centres.

"Piece-picking robots for warehouses have only been around for three or four years," says Martinelli, "so it's kind of interesting that we've gone from brand new exotic technology to something that's essential during a pandemic."

This does not mean, however, that fully automated "pandemic proof" facilities are in the works. On the contrary, the automation that involves the handling of physical goods depends on humans for the kind of adaptability that is most needed in a crisis.

For example, put walls – which can be rapidly implemented to facilitate high-velocity batch picking of in-demand items such as toilet paper – deploy pick-to-light technology to help humans collaborate on the fly with machines.

"If you're supplying paper towels and toilet paper," says Kushner, "and all those things that are high demand, the ability to quickly enable temporary fast-moving slots and new pick strategies helps companies deal with these enormous spikes for critical and essential goods."

The key is planning in advance so these alternate models are ready to implement in the time of a crisis.

"The people that have taken the time to design multiple processes and have that flexibility," says Kushner, "definitely have advantages. They've got automation, which they obviously want to maximize. But at the same they have manual processes configured and ready to go. It's about using the intelligence of your warehouse management system and just good old-fashioned management on the floor – the ability to start orchestrating work across these different processes."

"The more automated a warehouse is, the less flexible it actually is to scale up and down," says Martichenko. "So an automated warehouse can be highly efficient relative to the volumes it's designed for. But if volumes go below your plan, it's going to struggle, and if your volumes exceed what it was designed for, it's really going to struggle. So you get some emergency situation like the Covid pandemic and your highly automated distribution centre is not going to flex for that event. But a distribution centre that is being run by and large by people can certainly flex in both directions."

Robots also, typically, can't be deployed as a reactive measure – the widely discussed Robotics as a Service (RaaS) model is currently only feasible for clearly defined tasks such as welding.

"Automation projects in general take time to happen," says Martinelli. "The manufacture and shipping of robotic picking systems won't be the slow step. What takes some time is to integrate them into the overall automation scheme of a facility."

"A likely outcome of the crisis will be that many who have tried e-commerce in the past weeks will stick with it."

Adjusting to the post-Covid-19 era

A likely outcome of the crisis will be that many who have tried e-commerce in the past weeks will stick with it. As Parrott explains, the pandemic has forced people who would never have been targeted as candidates for online ordering and delivery options to embrace them.

"The demand for individual online ordering, specifically in grocery, is a perfect example," says Parrott. "After this is all over, all of these folks who would never have used the online tools to begin with are now comfortable with them."

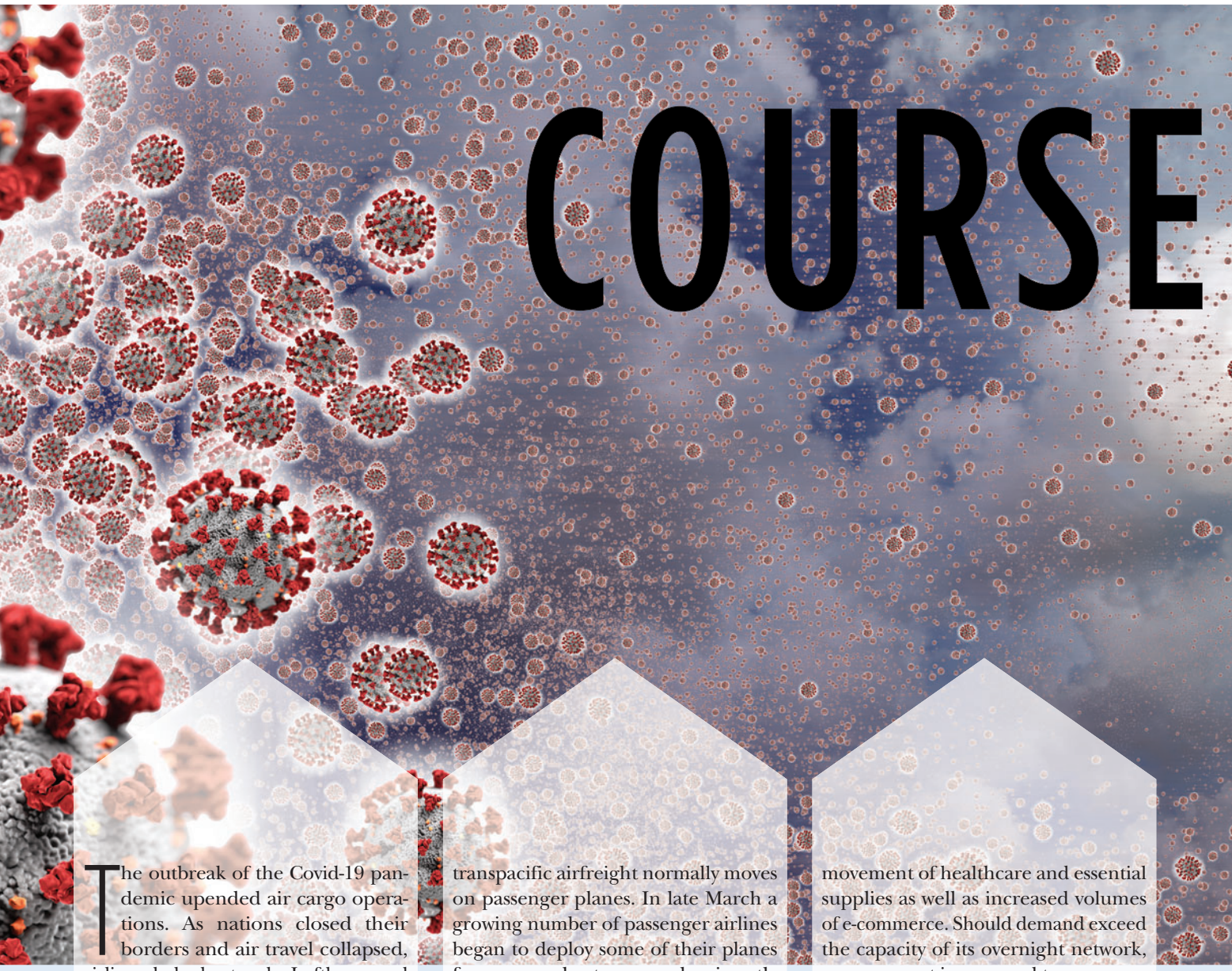
Another is that the supply chain profession may gain the respect that many feel it has been denied. The crisis has shown that supply chain professionals have a unique visibility into the wide range of corporate risks, even when such factors are not within their area of accountability.

"I think supply chain management is now going to be a very visible discipline," says Martichenko, "and organizations that have not taken supply chain management seriously as a true operational discipline are going to say they need to get smarter and more professionalized. Training and education in supply chain I believe is going to be a very common curriculum now."

"As companies emerge from this, I think people will be saying 'never again – we are not going to be caught unprepared,'" says Barlow. "I think you're going to start to see some real decisions on how they look structurally at their supply chain and how they can sort out their points of vulnerability, which will be coupled with a palpable understanding that now is the time to innovate and invest in systems that leverage significant technological advances such as AI to harness that data to gain a competitive advantage."

"The big thing we've all learned is that our supply chains aren't ready for emergencies," says Martichenko, "and that we need to understand the risk associated with our supply chains, and we need to embrace supply chain management as a serious profession, where your executive supply chain is at the table in the boardroom." IL

COURSE



The outbreak of the Covid-19 pandemic upended air cargo operations. As nations closed their borders and air travel collapsed, airlines slashed networks. Lufthansa and Cathay Pacific cut flights by 95 and 96 percent respectively. Air Canada (AC) suspended most of its cross-border and international flights, leaving only skeleton service to a few U.S. cities, a handful of European destinations and one route each to Asia and Latin America.

In the early stage those flights carried freight, but it was not regular commercial traffic. Only the most urgent, absolutely necessary shipments were loaded, says Tim Strauss, Air Canada's vice-president for cargo.

The implosion of passenger networks has eliminated a huge chunk of belly-hold capacity. About 60 percent of transatlantic and about 45 percent of transpacific airfreight normally moves on passenger planes. In late March a growing number of passenger airlines began to deploy some of their planes for cargo charters, predominantly between North America and Europe. The major U.S. airlines joined the action, as did AC.

Its first flights went from Toronto to Frankfurt, Amsterdam and London. By and large European routes are half the distance of Asian sectors, so the variable cost is significantly lower, Strauss points out. At this point airlines will avoid anything that burns cash, he says.

Cargojet, Canada's largest freighter operator has also pulled back from international flights, but – unlike AC – it's going full throttle. It has shifted aircraft deployed on international scheduled and charter routes to the North American theatre to support the movement of healthcare and essential supplies as well as increased volumes of e-commerce. Should demand exceed the capacity of its overnight network, management is prepared to run more daytime flights.

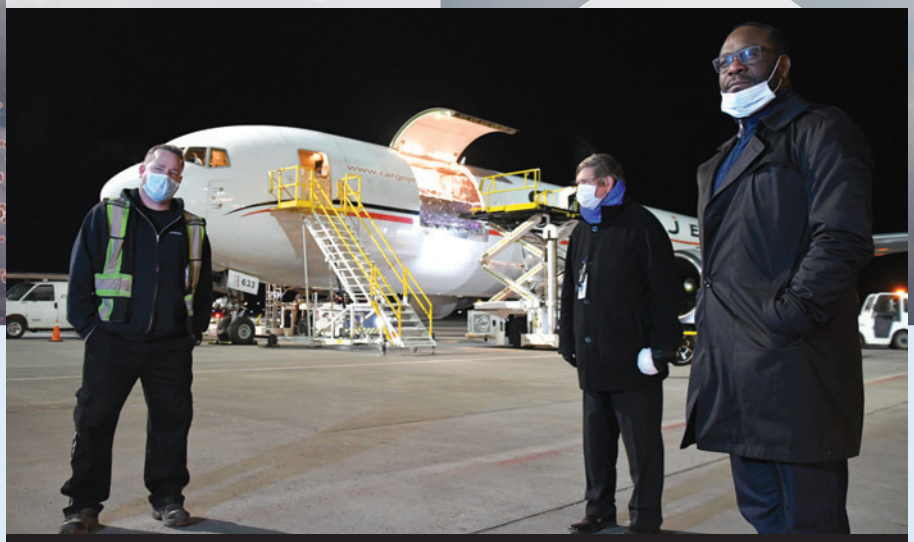
The all-cargo outfit had a strong 2019, with revenues climbing seven percent to $486.6 million and EBITDA up 21.9 percent to $156 million. The momentum has carried on into this year, driven largely by e-commerce.

This was in contrast to the international arena. Cargojet suspended its service to Latin America last year, and its interline business with international carriers – notably Asian airlines – declined about 30 percent. Management was hopeful that this would pick up in 2020, but the Covid-19 outbreak has hit those hopes, says executive vice-president Jamie Porteous.

Image: imagedepotpro, iStockimages.com

CORRECTION

Air cargo industry responds to Covid-19



Municipal Affairs Minister Kaycee Madu (right) and EIA President and CEO Tom Ruth (middle) thank a Cargojet staff member outside the plane at 12:30 am Monday, April 13.

Image: Edmonton International Airport

Cold chain

Edmonton International Airport completed its Fresh Cargo Center last year to cater to the latter two segments. Pharma traffic has been growing thanks to the development of a pharmaceutical cluster in the area, Lowe says.

To demonstrate its credentials in handling pharma traffic, Edmonton has gone for official accreditation under the Center of Excellence for Independent Validators (CEIV) program, an industry standard championed by the International Air Transport Association (IATA). The next step is to validate specific traffic lanes with other airports that have the CEIV badge, Lowe says. This guarantees shippers that every process on either end and on the airline that links them is certified to comply with specific standards.

Canada's perishables exports were going strong last year, led by lobster and other seafood shipments to China, but the Covid-19 outbreak abruptly halted this traffic during the Lunar New Year holiday, and volumes afterwards have been a far cry from earlier levels, one forwarder reports. Freighter flights between Halifax and China have been reduced as a result.

Using downtime to profit

While its traffic is down to a trickle, AC Cargo is using the slow time to train its staff using on-line courses on the use of artificial intelligence (AI) tools that the

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Air Canada reconfigured the cabins of three Boeing 777-300ER aircraft to create additional cargo capacity.

Images: Air Canada

carrier has developed through its participation in Ottawa's SCALE AI initiative, which aims to build the next-generation supply chain and boost industry performance by leveraging AI technology.

For AC Cargo a big focus has been maximizing capacity by getting a better handle on late cancellations and incorrect booking volumes, which usually result in planes departing with less payload than anticipated. The use of AI to identify patterns revealed that cancellations and other reductions in booked volume during the final week before departure occur at 60 percent of the rate of bookings. It also found that nearly half the time some customers turn up with more or less freight than they booked. These findings enable the airline to improve load factors by six to eight percent, Strauss says.

Vito Cerone, AC Cargo's director of marketing and sales, Americas, adds that the rise of e-commerce and other trends in commodities moving by air changes the approach a carrier has to take to its mix of freight on a plane.

> **"The cargo business will come back in demand before the passenger side. I expect three to six months of heavy demand for air cargo."**
>
> *Tim Strauss, Air Canada's vice-president for cargo*

"We can use AI to try to find the right blend. It depends on the day on the week, on the aircraft type and other factors," he says.

The use of AI is at the cutting edge of a broad push to digitize as much of the business as possible. Strauss intends to use the virus-imposed slow period, which AC expects to last for about three months, to make another push on that broad front.

"A lot of procedures still require paper. We hope to get those digitized over those three months," he says.

Airlines have put a lot of energy into automating the quoting and booking steps. Many have installed mechanisms to respond automatically to price inquiries and take bookings for shipments on their websites. IATA has been a tireless advocate of digitizing processes, urging users to replace paper documents and manual submissions with technology.

A growing number of carriers have also teamed up with third-party booking portals like cargo.one to go after ad hoc traffic from shippers that are not regular customers.

"Booking platforms are game changers," remarks Ken Singh, president of Atlas International Freight Forwarding. "They are good if you need an instant quote. Instant pricing is a very effective tool for the requests that you do right now."

However, he warns that fewer and fewer people will use these platforms if they do not provide net-net pricing.

As with other aspects of the business, the Covid-19 pandemic has affected online booking. The cargo charters that several airlines have launched with passenger aircraft usually cannot be booked electronically. Many of those carriers have set up charter desks to coordinate this and refer clients to their local sales staff to make bookings.

In the present situation, much of the industry's activity is reactive. "Capital plans are all out the door, and probably for the whole year," remarks Strauss.

"We're taking it one day at a time," says Lawrence, adding that there are always opportunities, such as medical charters in the present situation. However, monopoly situations at some airports can frustrate efforts to organize a charter, for instance if the incumbent is not flexible to accommodate an ad hoc flight, he remarks.

When it kicks in, the recovery should unleash strong demand for air cargo, he reckons. He is not alone with this outlook. "The cargo business will come back in demand before the passenger side," predicts Strauss. As trade ramps up faster than passenger traffic, belly capacity will lag demand. "I expect three to six months of heavy demand for air cargo," he says. IL

Image: thitivong, iStockimages.com

CARGO flowing smoothly

Canadian forwarders managing though pandemic

U.S. importers and forwarders have been put on alert by container lines, ports and marine terminal operators. They predicted severe congestion as a wave of import shipments ordered weeks ago is about to hit the docks with nowhere to go. With retailers closed and manufacturing activity in limbo, the fear is that many containers will not be picked up, leading to a pile-up of boxes that will clog port terminals.

The situation is exacerbated by a dearth of available warehousing capacity in many inland locations, which raises the spectre of increased charges at those warehouses, while shipments stuck in ports face hefty demurrage and container detention fees.

The National Retail Federation in the U.S. has warned that the anticipated disruption could be the biggest it has ever

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witnessed and called for concerted action by all stakeholders.

Situation normal

For Canadian forwarders the issue was a concern for a few days, but these worries subsequently fell away, reports Bruce Rodgers, executive director of the Canadian International Freight Forwarders Association (CIFFA).

To allay fears of congestion, the Port of Halifax issued a statement on April 3 that container vessel operations there had not been affected by the Covid-19 pandemic and that no restrictions had been imposed on its traffic.

Forwarders have not experienced any congestion at the nation's major ports. CIFFA has not heard of any delays from its members, Rodgers says.

"We have no issues at Canadian ports in terms of congestion or dwell times," confirms Karl-Heinz Legler, general manager of Rutherford Global Logistics. "The port of Montreal has declared that there's no congestion at the docks and truck processing times are normal. We heard the same from Vancouver."

When the issue first arose, CIFFA reached out to carriers and terminal operators to ask for relief on demurrage and container detention charges. U.S. interest groups have done the same – with mixed results. Some carriers agreed to waive charges, while others remained firm.

Canadian operators have not seen a need to drop charges. With the exception of Air Canada, which extended the free period from three to 10 days, everybody rejected this, pointing to the fact that railways, trucks and ports have not stopped operating, reports Rodgers.

"This caused some heartburn initially, but everything seems to be operating," he comments.

Ken Singh, president of Atlas International Freight Forwarding, reckons that the fluidity CN regained after recent rail blockades has been a major factor in keeping containers moving through the ports. Moreover, inventory levels have come down, he notes. Cargo that was sitting in terminals and warehouses was cleared out during the extended shutdown of Chinese manufacturing in February.

Bruce Rodgers

"So far, where we had containers to deliver they were delivered, but there may be some companies that shut down 100 percent. There may be some horror stories to be told when this is over."

– Karl-Heinz Legler, general manager of Rutherford Global Logistics

As with flows through ports, forwarders have not reported problems with warehousing capacity inland. Nor have there been problems with importers not accepting incoming traffic.

Speedbumps ahead

"So far, where we had containers to deliver they were delivered, but there may be some companies that shut down 100 percent. There may be some horror stories to be told when this is over," says Legler.

The prospect of consignees unable to pay is a serious headache.

"Moves by the government to delay the payment/collection of HST/GST and duty are wonderful for the moment, but the major concern is what happens in June when those amounts become due. Will importers be able to pay in June or are we just creating a larger possible problem a few months from now? The government is possibly creating a problem for customs brokers who are collecting the duty and taxes. The liability is on the brokers bond. What will the government do to support the customs brokerage community in the event importers default or further delay payment when these are due in future?" asks one forwarder executive.

From CIFFA's vantage point, this is the biggest headache at the moment, says Rodgers. The organization has written to the CRA as well as the CBSA to address the issue that the protection was not offered to the brokerage community.

On the issue of communication and data flow Rodgers notes that some customs processes have moved from antiquated systems to online channels. He hopes that this will remain in place. "We don't want to revert to archaic systems," he says.

Digitization stalled

While the response to the pandemic has pushed some processes online, elsewhere initiatives aimed at advancing digitization are in limbo. The drive for the electronic house air waybill has been suspended, Rodgers reports, adding that other initiatives also appear to be stalled for now. "We wait to hear about the new export guidance system," he says.

"It's going to be a slow process back. There will be a lot of debt, a lot of fear. A lot of companies will have depleted their resources," predicts Singh.

Legler's clients have not mentioned how they see their return to normal. "Everybody is hunkering down now," he says.

"You can't just simply open up again. It's going to be a slow phase-in. Restrictions will still be there," he reflects. "Yes, there will be a need to replenish stock, but there are also going to be cash flow issues. You need to make a down payment when you place an order." IL

THE DIGITAL IMPERATIVE

Third-party logistics increases its reliance on new technologies

Image: thitivong, iStockimages.com

Digitization is not a new trend for third-party logistics, but it has suddenly taken on greater urgency in the Covid-19 world. Shippers, carriers, and logistics service providers have long been seeking enhanced technologies that empower them to reduce costs, create efficiencies, and make more informed business decisions. Now they are adding business continuity to the list of digital benefits.

According to the CSCMP's 2020 Third-Party Logistics Study, digital capabilities are now a key differentiator. "Shippers are increasingly using data to optimize their networks and drive supply chain decisions, and the availability of capable IT technologies and competencies in the IT area has become a key selection criterion in shipper bid and RFP processes," the report notes.

Shippers are primarily looking for 3PL providers with electronic data interchange (EDI), transportation scheduling and planning (TMS), warehouse management (WMS), and visibility tools at their disposal, the report says.

According to the MHI 2019 annual report, *Embracing the Digital Mindset*: "In the future supply chains will likely integrate real-time supply chain visibility tools and predictive analytics capabilities to create transparency for all stakeholders. Information about companies, suppliers, and sourcing locations can be readily available and accessible to all stakeholders across the entire supply chain."

And while new technologies such as

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Investing in Advanced Technology Prior to COVID-19 Enabled Polaris Transportation to Create a Virtual Office Environment Within Two Days

As the COVID-19 pandemic continued to spread across the globe and increased safety and security regulations came into place, it became evident which companies were prepared and which were scrambling to keep up. Our investments into the development and utilization of advanced technologies began many years ago and because of this Polaris was able to create a virtual work-from-home office environment for over 85% of our staff within only two days of the outbreak.

How Were we Able to React so Quickly?

It comes down to process and procedures. Our investments into artificial intelligence and robotic process automation had already allowed us to run more efficiently by removing mundane and repetitive tasks from our employees while significantly reducing the amount of paperwork manual communication and filing previously necessary in day-to-day transportation operations.

Polaris employees were also well-versed in current procedures already in place which include: secure remote access to our applications and systems, various communication platforms and methods, health and safety policies in case of emergency or infection, alternate chain of command procedures and equipment sign-outs. Polaris also has internal IT personnel in place to support both our team and our customers if facing any technological challenges. It is with this due diligence of investment and attention to detail that Polaris was able to transition our operations so seamlessly.

Finding the Silver Lining: How Polaris Has Been Able to Become a Better Company Because of COVID-19

This is a terrible crisis which has affected so many businesses and people around the world. It may not be easy but it's extremely important to learn, adapt and grow from these challenges we're faced with. We have found we are communicating better and more frequently with our employees, customers and partners which has helped to forge deeper connections. Polaris HR has created support groups to assist with emotional well-being during these times of isolation and have created a Pandemic Committee to continue to improve on our health and safety policies.

Polaris is committed to the further development and utilization of these advanced technologies to create even more efficiencies as a safer and healthier workplace and a second-to-none customer experience. If we continue to pay close attention and stay open to new ideas during these trying times we will come out of this COVID-19 pandemic smarter and stronger together.

Dave Cox, President

QUESTIONS OR COMMENTS? CONTACT OUR TECHNOLOGY TEAM:

POLARISTRANSPORT.COM | 1.800.409.2269 X 1247 | TECH@POLARISTRANSPORT.COM

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blockchain, artificial intelligence, machine learning, automation and robotics are all in use to varying degrees across the globe, these have yet to gain wide acceptance.

Recent events have proven to some in the industry that having a plan is the most important aspect of the digital transformation.

Drivers for DHL Express are on the frontlines during the Covid-19 pandemic and the company's ability to respond quickly to changes is in some part tied to investments DHL has made in digitized solutions.

"From the perspective of being on the frontline at DHL Express I can say that digitization has absolutely been critical for us in terms of our ability to mobilize and then execute the plans we have for business continuity," said Andrew Williams, CEO of DHL Express Canada.

Drivers, out on the road every day, need to secure proof of delivery. Through the technology already employed, DHL was able to have them take pictures of customers' signatures on a piece of paper. Customers didn't need to touch the driver's scanner anymore.

"This is something we would not have been able to do, even just five years ago," Williams said. "We implemented this within 48 hours, so that there was no impact on being able to secure and collect the proof of delivery that is such a critical part of the commitment that we make to customers.

"We will, through our logistics network, move things that are critical that will make the world a better place, faster. So, we absolutely have to be in a position to respond at a time like this and digitization has helped that."

People first

Whatever digital technology is applied, it's important to realize that it doesn't run itself. You need people.

"It's having people with the depth of expertise in what you're doing and what your customers are doing and what the data means," said Russ Felker, chief technology officer of GlobalTranz, a 3PL with a network of more than 34,000 carriers and more than 25,000 shipper customers. "Until you have that you can't actually build the machine learning model, you can't build the artificial intelligence pattern, like the chatbot that interacts with customers. You can't build that to interact with logistical data unless you have logistical expertise."

"Automation, digitization and improvement of processes actually drives productivity, which has the impact of spurring growth – and that then creates more employment."

– Russ Felker, chief technology officer of GlobalTranz

Felker pointed to Uber Freight, which started up as a completely digital platform, like the original ride-sharing app. "Now they've opened operational centres – with people. They figured out what most of us in the industry already have: that you have to have good people sitting behind the data."

Freight doesn't work seamlessly. Disruptions – like Covid-19 – happen. "If you don't have people and relationships built up you can't just digitally figure out how to handle everything that is going on, from a driver who has decided 'I'm not going to deliver a load into that hotspot,' to a lineup of container ships at a port," Felker added.

A purely digital system can work well in understanding how to move freight in a "normal" environment, but these times are anything but normal, Felker noted.

Getting workers onboard

One of the challenges of automation and digitization, according to Williams, is getting employee buy-in. The challenge is amplified by the company's high hiring rate. During the past year Deutsche Post DHL Group added over 30,000 jobs worldwide.

"Automation, digitization and improvement of processes actually drives productivity, which has the impact of spurring growth and that then creates more employment," Williams said. Companies that can digitize and get their workforce onside with the idea that it will improve the business, and unlock further growth, will move a lot faster than companies that perhaps face internal resistance because people fear for their future.

While companies can be focused on big-picture projects, like robotics, autonomous vehicles, and big data, Williams said, they need to ensure attention is paid to the frontlines, with projects that improve the employee experience, for example.

"For us at DHL Express that has meant the creation of an employee app that allows an employee, and the company, to automate many processes such as requesting vacation time and booking shifts. These digitization projects don't always have to start at the most complex level, like drone delivery, but sometimes it's best for it to move through all parts of your business."

A strategic approach

Both Williams and Felker feel digital transformation is not just adopting latest digital technologies, but establishing a digital strategy.

3PLs transform digitally to differentiate themselves in a competitive market and to provide end-to-end visibility and timely, accurate information for customers' critical decision-making processes. According to recent McKinsey research, companies that aggressively digitize their supply chains can expect to boost annual earnings growth and revenue by around three percent.

Digitization is a core piece of DHL's strategy. "It's a primary feature in our strategy and a big part of the future that is really shaping our business and the logistics space in the coming years," Williams said.

With many global studies suggesting that a significant percentage of the world's logistics business remains quite manual, "there's a huge opportunity for digitization, and the companies that get it right are going to go a long way." IL

BUILDING a legacy

Blum Canada invests in automation for the long haul

In 1952 when Julius Blum started making horseshoe studs in Austria, modular cabinets didn't exist, and neither did self-supporting automated distribution centres. But almost 70 years later his company has evolved into a sophisticated manufacturer and distributor of hinge systems, drawer runners, lift systems, and the machines that install them, primarily for kitchen cabinets.

And they are building automated distribution centres to keep up with demand. The latest one, in Mississauga, Ontario, will replace a warehouse that Blum Canada has been using since 1987. The company has outgrown the 42,000-square-foot space that's split between a 20-foot clear standard warehouse and a section of narrow aisle racking.

"We knew we needed the new building because we couldn't add on to the existing building anymore; we had outgrown the property," says Kevin Tratt, Blum Canada's president and general manager.

The logic of automation

Opting for an automated, high-bay DC was a logical decision for Blum Canada, Tratt says. In Austria, the company has been installing automated warehouses since the late 1980s thanks to the scarcity and high cost of suitable land for building. Now they are in use throughout the company's global network.

The automated facility will have two output doors and one induction door.

Nonetheless, the Canadian operation spent a few years analyzing the business, the number of SKUs they were handling, and material flows. Tratt estimates that they have about 4,000 SKUs in Canada, with many sizes and packaging types, from small items that would be stored in trays, to palletized products.

Plans for the new DC evolved with the company's business in Canada. Many of its customers are "larger manufacturers

Images: Blum Canada

so they want to minimize the amount of packaging that they're working with. I guess it's the difference from shopping at Costco, so to speak, versus a regular supermarket," Tratt says. The shift away from smaller lots to more full-pallet picking made automated pallet picking the logical choice.

When the new building goes live they will still be picking some cartons from full pallets, and returning what's left back to the warehouse, "which will be a bit of an inconvenience", Tratt notes. However, the company has a three- to five-year plan to add a small-quantity picking operation once it can identify which items will be exclusively carton shipments or multi-carton, non-pallet shipments.

A "monster"

The new building is 30 metres wide, 90 metres long, and 24 metres tall (98 by 295 by 79 feet). "It's a monster!" Tratt chuckles. It is completely self-supported, resting on a 1.5-metre-thick concrete pad. The racking was assembled first, followed by the roof and cladding.

Inside, there will be about 6,500 pallet locations served by three cranes, each with its own aisle. There will be one induction point with a transfer cart that delivers the pallet to one of the cranes. For less-than-pallet picks there will be two stations where human operators will pull the cases off the pallets, and one output location for full pallets. When fully operational, the DC will be staffed by two pickers handling the case picks, and two people to load and unload the full pallets.

Site selection

Finding the right place to put the new DC came down to keeping it close to the existing facility and finding an affordable piece of land the right size. Tratt notes that it was very important to make it possible for staff – who have an average tenure of about 12 to 15 years – to get there via public transit.

He feels they timed the purchase – of 5.2 acres near the confluence of highways 410 and 401 in the Greater Toronto Area – extremely well. "When we made the agreement to buy the land at the end of 2015, it was roughly a million dollars an acre. It's now four and a half years later, and what I've been told is they are selling acreage just up the road from us at two and a half million," he says.

Finding a piece of property that would give Blum room to grow was key, he says. "We still have about 40 percent of the property left – unused – that we can grow onto when it's required."

The building stands almost 80 feet high and will house almost 6,500 pallet positions.

No-man land

Although the land was purchased in 2015, it took until the end of 2018 before building began on the site. Getting permits from the City of Mississauga was a challenge, Tratt says. "The Ontario Building Code has no provisions for automated warehouses. They have no clue," he says. When it comes to how many exit doors you need, for example, it's all based on staffed warehouses, not automated facilities with almost no people.

It took a lot of time and discussion to eventually get the permits sorted out, and by then Blum was running out of time. In the end they went ahead and poured the slab before the building was permitted, to keep the SSI Schaefer rack installation on time.

"The cost of delaying the construction any longer and losing another construction season far outweighed the cost of any potential fine that we may have been levied by the city, so we made the decision to go. Of course, I think our general contractor was relying on some relationships that he had with the local inspectors in the city, those sorts of things. As it turned out it worked out quite nicely," Tratt says.

Covid-19 delays

With construction in Ontario shut down mid-April, 2020, Blum's project was left partially complete. Automation supplier Dematic was pulled off the job with the electrical work left to be finished. Simulations were to take place through the spring months, with product being gradually loaded in as the system was readied for operations.

The original plan was to go live with the new facility just after the Labour Day holiday in September, but Tratt expects at least a month of delay, possibly three. During the shutdown there were weekly video calls to touch base and keep up with any changes in the situation.

Working with Dematic on the automation, SSI Schaefer on the racking and general contractor Greyson Construction has been "awesome, right from the start," Tratt says. "The working relationship between Dematic and Greyson Construction has been great, they always seem to find a way to make it work."

A legacy of automation

For Tratt seeing the racking go up and watching the cladding get installed on the outside of the building was exciting. But when the cranes were installed and the magnitude of the project became apparent, "that was the high point" of the construction, he says.

"The next one is going to be when they load and retrieve the first pallet out of that warehouse, even if it's empty, or full of empty boxes," he says. "And then when it works, I'll retire. That'll be the highest point of all." IL

ALL ABOUT THE INTEGRATION

Even before the Covid-19 pandemic made e-commerce an essential service, the push was on for faster, more accurate and less labour-intensive order-fulfillment solutions. At MODEX in March this year, an emerging trend was the integration of warehouse and order management software controls with automated equipment. Mobile automated order fulfillment devices and systems stole the show. Here's a selection of a few that caught our attention.

Integrated right-sized packaging

Packsize and 6 River Systems have worked together to integrate right-sized packaging with mobile robotics. They demonstrated the system at MODEX in March. Representing a ship-from-store environment, a Packsize iQ3 worked with 6 River Systems's collaborative mobile robot, Chuck.

By integrating directly into a company's warehouse management system, right-sized cartons can be created and paired with Chuck to help operators minimize walking while ensuring a sustainable box for every order. The collaboration can make labour more efficient and reduce material and shipping-related costs, all while optimizing fulfillment in a small footprint.

Larry Emmert, vice-president of operations at Legend Valve, is a customer who uses the combined solution. "Our integrated solution with Packsize and 6 River Systems has had an immediate positive impact on our productivity, packaging, and transportation costs. We would not have realized these improvements without a tightly integrated solution delivered from both of these partners," he said.

Command centre for on the fly adjustments

GreyOrange has combined its GreyMatter software and its Ranger robots under the GreyOrange Fulfillment Operating System. Ranger robots communicate with each other and with GreyMatter as operations are executed so that the system keeps pace with real-time order flow and other realities such as workers on hand, worker pace, inventory availability, packing times and shipping windows.

The GreyMatter Command Center gives DC managers and workers a complete view of real-time operations on the floor. Control screens present information needed to stay on top of order fulfillment pace and other metrics, with drill-down skills that enable adjusting work assigned to pick-pack stations, robots and people, or adjusting other operating elements to prevent order breaches and consistently achieve operating goals.

Working with the software, the Ranger GTP is a goods-to-person (GTP) mobile robot that transports inventory to workers for picking and packing, while Ranger Mobile Sort is a mobile conveyance and sortation robot that operates in fleets to move parcels from receiving through dispatch to avoid sortation bottlenecks that can occur with rigid systems.

Picking across multiple orders

Fetch Robotics and Zebra Technologies Corporation have integrated Fetch's Autonomous Mobile Robots (AMRs) and Zebra's FulfillmentEdge software. The solution optimizes picking across multiple orders for piece, case, and pallet workflows.

Through the combined solution, workers are collaboratively dispatched in optimized pick paths across multiple orders. Worker and AMR movements are orchestrated for picking operations but can also interleave other tasks such as replenishment into the flow to better use workers' time in the aisles.

In addition, FulfillmentEdge can direct Fetch AMRs to other non-picking operations such as removing recycling, reverse logistics and restocking packing stations to maximize robot utilization. The solution also makes it easier to train workers for new workflows, reducing training and onboarding time up to 90 percent.

Zebra FulfillmentEdge uses multiple sources of data, including a customer's warehouse management system (WMS) and other back end systems as well as contextual and mobile device data to direct and synchronize the best-next-action of multiple workers and Fetch AMRs for collaborative picking across multiple orders. It uses picking strategies that include zone picking and wave picking, among others.

Robots as a Service

Berkshire Grey is now offering Robots as a Service (RaaS). Market trends, consumer behavior, and new competition have strained retail, e-commerce, grocery, convenience, and foodservice supply chains for several years. And with the Covid-19 pandemic, demand for retail delivery is skyrocketing.

Robotic automation allows for enhanced asset utilization, and labour optimization. RaaS subscriptions make it easier for enterprises to acquire robotics technology without massive investment.

"Customers across the retail ecosystem are facing a range of challenges from demand that is double or triple normal peak volumes to significant short-term sales downturns," said Peter Van Alstine, senior vice-president and GM for retail at Berkshire Grey. "In this extraordinary business climate, RaaS makes it possible to address labour availability challenges, avoid costly new warehouse buildouts, and secure the fiscal benefits of complete robotic automation solutions without the traditional capital requirements."

Berkshire Grey's robotic solutions are now available via RaaS for store replenishment; induction stations; pick cells; put modules; and, parcel sortation systems.

RETHINKING THE GLOBAL SUPPLY CHAIN

It provided a competitive advantage for decades. Now it represents a business risk.

IF SUPPLY CHAIN weren't already a boardroom topic, it quickly became one thanks to Covid-19. One of the most important tests for a supply chain is its resiliency in the face of crisis. Many Canadian companies have supply chains that span not only interprovincial borders, but also international borders. That makes for a lot of links and for a lot of things that can go wrong.

And yet, for the past 30 years or so, very little has gone wrong. Our supply chains have become so efficient they've basically become invisible to the millions of Canadians who depend on them to deliver the products they need, when they need them, at prices they can afford.

That came to a halt over the past few months thanks to more than 200 countries and territories reporting cases of the virus and the business disruptions that went with it. Suddenly, finding a loaf of bread or carton of milk on the grocery store shelf wasn't a certainty. Suddenly, there were concerns about food shortages and a frustrating inability for a few weeks to have an effective supply of protective equipment and test kits.

For products that have a high value relative to their shipping cost, it often makes sense to manufacture them in a lower-cost region – such as Asia, Eastern Europe or Africa – and ship them to where they will be purchased. That's why our supply chains have become increasingly global.

But, just as supply chains have gone global, there has also been increased use of subcontracting as a way to reduce costs. Global supply chains have become deeply tiered with suppliers drawing upon suppliers. It's not uncommon today for companies to have four or more tiers of suppliers. And because we've enjoyed efficient and relatively inexpensive logistics and transportation, we ended up applying lean and just-in-time production methods on top of all this to support those global supply chains.

LOU SMYRLIS
Managing Director,
Newcom Media's Trucking & Supply Chain Group

"It's important to consider how much safety stock you really need, bean-counters be damned."

Talk of little margin for error.

Until Covid-19, such optimized, low-cost supply chains provided us with a competitive advantage. They were a good thing. Worth striving for. Now they may represent our single largest business risk. And are worth reconsidering.

Small and medium-sized companies – the engine that drives the Canadian economy – are the most at risk. They have the least bargaining power and possibly the least experience in looking for alternate sources of parts or raw materials when a supply chain in a remote part of the world goes dark.

What should we do? Use the lessons learned from the past few months to come up with a better way forward. Begin with considering these three areas:

- ***Supply chain vulnerability:*** Sure, carrying inventory is a cost, but it's important to consider how much safety stock you really need, bean-counters be damned. To a complex manufacturing process that requires certification, for example, a supply chain disruption is a clear business threat. Carrying more inventory as safety stock may be well worth it.

- ***Supplier vulnerability:*** If you don't regularly assess the financial and operational health of your suppliers, this is a good time to start. Just because a country or region may be opening up again doesn't mean your suppliers in that region, who may have been closed for weeks or months, will be ready to resume business as usual or ever again. Localizing at least some of your suppliers as a buffer is worth considering.

- ***Eyes on inventory and where it's positioned:*** This will help you understand where you have flexibility in products and inventory space so you can better manage through short-term and long-term risks. This is not something you're going to be able to do with pencil and paper. Adopting technology designed to deliver those business insights is a big part of this. You need to first educate yourself about such technologies and then invest in them.

For as long as this virus is with us – perhaps another year or two – we are likely to live under continuing threats of global supply chain disruptions. Supply chain teams will be tasked to get creative about how they source and store and move products across the country. But that's the challenge I'm least concerned about because being innovative is exactly what our supply chain professionals are best at. IL

OLD LESSONS FROM A NEW PANDEMIC

A reassessment of inventory practices is needed

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FOR MANY INDUSTRIES in Canada, Covid-19 has reignited the discussion of "how much is too much" when it comes to inventory, and how to transport inventory to the "right place at the right time".

Businesses have been fragmenting inventory classification for decades in order to better manage the trade-off between carrying costs and customer service. Classifying inventory – whether as cycle stock, safety stock, seasonal stock, speculative or in-transit stock – enabled inventory managers to fine-tune demand forecasts, improving the ability of logistics managers to predict capacity requirements for transportation and warehousing.

This "divide and conquer" approach to managing inventory through classification also enabled companies to realize benefits from reducing inventory levels in various categories. As transportation systems improved with globalization, inventory reductions became more feasible for many organizations.

This practice was exacerbated by business philosophies that identified inventory as waste, or focussed on inventory reduction, rather than inventory as a strategic asset for profitability. Ever since businesses started believing their role was to maximize profits rather than customer satisfaction, each business generation seemed to develop a miracle-cure for excessive inventory.

Starting with the Toyota Production System in the 1970s, followed by Total Quality Management and Six Sigma in the 1980s, and crowned by Lean Management in the 1990s, each of these philosophies improved the organization's ability to wring more profits from the supply chain by reducing inventory. Supply chains were being redesigned for investors rather than customers. But at what cost? And what risk?

With respect to the relationship between inventory levels and pandemics, the first real question mark for many people in the 21st century occurred with the onset of SARS (severe acute respiratory syndrome) in 2003. Within a year SARS quickly spread to more than two dozen countries around the world.

Hospital inventories of PPE (personal protective equipment) such as masks, gowns, gloves, and sanitation products were rapidly depleted. Just as quickly, consumer versions of these products disappeared from store shelves as customers engaged in panic buying, afraid of the uncertainty generated by an unknown illness and potential shortages of products that might protect them. Nothing sparks panic buying like a pandemic.

One of the lessons learned from SARS was that society needed to carry more inventory of PPE and products that consumers believed essential when faced with a pandemic. Adherence to precautions and practice in implementing them were deemed critical to containing that disease. In the world of supply chain management, one might translate that as "risk management" and "risk mitigation", both dependent on business strategy.

SARS taught everyone that some critical medical items and consumer goods were understocked, and industry partners were often unprepared to replenish those items quickly. As SARS receded legislators promised we would be better protected next time, fortified with safety stocks of PPE and essential goods. Inventory is expensive, however, and these promises faded almost as quickly as the threat of SARS itself in the years that followed.

The same problem resurfaced with the outbreak of Covid-19 earlier this year. The fact that society was once again unprepared was evident when consumers, skeptical of government claims there were plenty of food stocks to go around, began panic buying everything from apples to toilet paper.

Their fears were justified on January 24th when Ontario health officials naively congratulated themselves at a press conference, proclaiming, "we're ready, we're prepared" even as hospitals and medical personnel were warning of potential PPE shortages. Nothing sparks panic buying like a government statement that there's no need for panic buying.

Why do inventories tend to disappear so quickly in the face of uncertainty? The total business inventories-to-sales ratio through 2018 and 2019 has been reported at approximately 1.4 months. In other words, businesses had enough inventory on hand to cover about six weeks of sales.

This ratio is a product of Lean management practices, gradually reducing inventory year over year. Six weeks inventory may be sufficient in times of little uncertainty, but six weeks inventory can disappear in six days when faced with the threat of a pandemic. And replenishment times for imported products can easily run 30 to 45 days, leaving empty shelves in hospitals and retail stores alike.

Perhaps after this pandemic, organizations will reconsider their business strategy. Does business exist to satisfy investors or customers? Can one exist without the other? Probably not, but when faced with global threats due to pandemics, perhaps a reassessment of inventory practices, based on rationality rather than reduction, is warranted. IL

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