

# COVID-19: WHAT'S NEXT FOR SUPPLY CHAINS?

## Automation technologies for supply chain management are necessary to prepare for the next crisis

BY KRISTINA URQUHART

**T**enuous relationships with overseas suppliers, outdated models of monitoring demand and a lack of end-to-end visibility created a perfect storm for manufacturing supply chains as COVID-19 lockdowns brought the world to a halt this spring. Jonathan Wright, global head of cognitive process re-engineering at IBM, says supply chains have become increasingly lean over the past decade as manufacturers tried to meet consumer desire for low costs. Aside from new product innovations and seasonal changes, supply and demand had also remained relatively stable.

“Our supply chains became actually quite fragile, but we didn’t realize how fragile they were,” he says. “We had gotten to a point where we could have a just-in-time supply chain. And in a stable world, that makes sense. The issue is when you have a supply shock or a demand shock.”

As a result, Wright says the manufacturing industry in North America will see rapid implementation of automation technologies for supply chain management over the short term. “That acceleration will give people

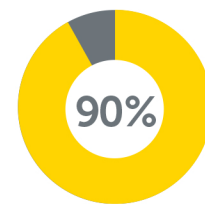
confidence that automation and AI and machine learning can have a huge impact,” he says.

### The time is now

Wright estimates that pre-pandemic, the timeline for a manufacturer to integrate Industry 4.0-enabled technologies and automation systems into its supply chains might have been about five years. Now that the new coronavirus has exposed vulnerabilities and ultimately changed the way we do business, he expects that timeline to be closer to one or 1.5 years.

As the sector emerges from the COVID-19 lockdowns, the focus for companies should be on platforms that bring advanced technologies together to provide real-time insight and action into their supply chains. “Smart” supply chains that enable an organization to make adjustments on the fly will establish better resiliency and stability the next time there is a crisis.

“Organizations at the moment are being forced into new ways of working. We are using AI and machine learning to drive demand sensing at an incredible pace, and it’s really pushing organizations into a place where they’re seeing the benefit,” Wright says.



Ninety per cent of Fortune 1000 companies rely on tier-two suppliers in China and were immediately impacted with the first coronavirus lockdowns.

“Nobody’s going to say, ‘Oh, that was great, now let’s go back [to the way it was before] and do it in a manual way, or just based on ERP. No, they’re going to say, that was really cool. How do we take that same learning into my next process – into my expediting process, into my logistics process, into my manufacturing process?’”

### The domino effect

When the COVID-19 outbreak hit China earlier this year, the first factor to cripple supply chains was that 90 per cent of Fortune 1000 companies rely on tier-two suppliers in that region.

When the city of Wuhan went into lockdown in February, impact to global supply chains was swift. With tier-two supply compromised, tier one was affected. And consumers quickly felt it.

“It was almost instantaneous,” says Wright. “And it was across industries. COVID, we think, is indiscriminate in the way that it impacts individuals – and it felt indiscriminate in the way that it was impacting all businesses from a supply perspective.”

The supply chain was further weakened by the fact that companies may not have had deep relationships with those tier-two suppliers, resulting in only partial visibility as to what was going on halfway around the world – and thus organizations had little understanding of how vulnerable they might be were something to go awry.

ATS Automation in Cambridge, Ontario was one of the companies that did have insight into how its supply chain

**The lockdown changed needs in a way that the supply chain – and, in turn, end distribution centres – couldn’t respond to without a vast amount of flexibility.**

might be affected by the lockdowns in China. Andrew Hider, CEO, says that as a manufacturer of automation systems for critical life sciences manufacturing, one of the company’s top priorities early in the pandemic was to evaluate their biggest areas of risk.

“China was a key one on that radar, and so we started understanding the per cent efficiency [of our suppliers],” Hider says. “What are they running at, so we can know – are they at risk or not?” As ATS discovered potential bottlenecks in China, the company quickly looked to its domestic supply chain to find opportunities for dual sourcing.

“We went from a broad pandemic risk process that we’d had in place, to very specific around this [issue], where we solidified it to ensure that our supply chain was ready.

“By no means is it perfect, but we have identified high-risk areas and we’ve either identified an alternative, or how we’re going to manage through that.”

### Planning comes up short

The pandemic brought another unexpected challenge for supply chain leaders – restrictions on movement led to a rapid change in consumer buying behaviour.

“Our demand planning and demand sensing capability [were] woefully short to be able to respond to it,” Wright says.

That’s because traditional demand planning for supply chains has been centred on time-based, or historical, data, meaning that what came before informs what comes next. Wright’s analogy: “It rained yesterday; it’ll probably rain tomorrow. It rained this time last year; it’ll probably rain this time tomorrow.”

The lockdown changed all of that. It altered needs in a way that the supply chain – and, in turn, end distribution centres – couldn’t respond to without a vast amount of flexibility.

Take this as an example: under normal circumstances, a manufacturer might regularly sell its product as singles, so that’s what is readily available in the supply chain. But the lockdown caused a shift in buying behaviour – more people started to buy family packs.

“That meant further up the supply chain – in the manufacturing point – I needed to have actually been able to get the signal that I need to prepare more family packs, and then change my production line to family packs,” Wright explains.

### How automation will help

For manufacturers to ensure rapid response times, they need better end-to-end visibility. That means being able to “see” into the entire process, from manufacturing through to distribution warehouses. It means connectivity

between production facilities and logistics operations across countries and continents.

Technologies such as artificial intelligence (AI), machine learning, blockchain and the Internet of Things (IoT) facilitate this connected environment by making predictions, tracking inventory and dynamically redeploying goods. Using machine learning and IoT, data on buying behaviours can be drilled down to a postal code level for real-time demand sensing.

Products equipped with sensors can be tracked in real-time – so that everything can be monitored, from temperature to weather to location to who has handled goods – and that data can enter into a blockchain for record-keeping. Digital twins – virtual representations of physical assets or processes – strengthen supply chain modelling, allowing operators to test and set alternate logistics pathways in advance of a catastrophic event.

### Where people fit in

Post-pandemic, Wright says there will be a focus on moving to what he calls “intelligent workflows” – humans working to solve problems rather than executing processes that can be completed by smart technologies.

“Intelligent workflows [are] where we start moving away from just process-centric technology to technology that spans across a workflow – like expedited orders or demand to fulfill,” Wright says. “We’ll see automation driving some of the base processes, allowing people to have a more valuable role to play.”

The continued restrictions on movement due to the pandemic will also highlight the accelerated need for automation to drive productivity. Wright expects manufacturers to focus on ways to increase automation while ensuring their people are working effectively and collaboratively – as “better versions of themselves,” he says.

If AI and machine learning drive planning, for example, human planners can focus on exception management and strategy. “Because of that, they’re actually more fulfilled,” Wright says. “Because of that, they drive more innovation. Because of that, they’re driving better client or customer satisfaction.”

### What’s an SME to do?

AI, blockchain, digital twins and IoT are technologies that the industry talks a lot about – but for a small- or medium-sized manufacturer, still might seem out of reach.

But the pandemic has created a new world – and to stay competitive, SMEs will need to adapt quickly. What may have once seemed foreign is now at the forefront.

Wright says the industry is experiencing a paradigm shift in the way automation

technologies are implemented. In March, some of IBM’s clients had no visibility into their supply chain. Within a month, they were using a dashboard to see their inventory across the country, with AI driving demand sensing.

“The adoption of the new technology is being put into place out of necessity, versus in a pre-COVID world it was out of, ‘Well, I’ve got to have a business case, I need to test it on a small group, I need to trial it, and then maybe eventually we’ll start scaling,’” he says.

“Although [automation] sounds quite high-level and a significant amount of investment, actually, when you break it down, it isn’t. What we’re talking about is organizations, instead of sticking in their silos, starting to work as an integrated team.”

Wright predicts the marketplace will remain volatile until the reproduction number of coronavirus drops below zero. In light of that, he recommends five steps for SMEs to strengthen their global supply chain networks as they emerge from lockdown. *Find the full list online at [automationmag.com/a-perfect-storm-covid-19-disrupted-supply-chains-heres-how-automation-will-help](http://automationmag.com/a-perfect-storm-covid-19-disrupted-supply-chains-heres-how-automation-will-help)*

### What’s next

Andrew Hider, CEO at ATS Automation in Ontario, expects that his customers will be looking critically at their global supply chains after the pandemic. Before the U.S.-China trade dispute, one ATS client, an insulin manufacturer based in the United States, shifted production from China to the U.S. Despite moving from a low-cost region to a higher-cost region, the client has seen increases in both its gross margin and its level of control over the supply chain.

“That example is just one of many that our customers are going to be faced with,” Hider says. It’s “early for them to start talking about strategy, but they’re already starting to assess how they do it, where they would do it. We’re going to be seeing a whole different dynamic as we commoditize the post-COVID world.”

A supply chain that’s geographically varied will allow for flexibility in times of crisis – and, with additional local production, could reduce carbon footprints and exposure to increasing air and freight rates. Ultimately, the COVID-19 pandemic has shown that mitigating risk is a top priority.

“If I’m looking at a risk lens as well as a financial lens, I may make different decisions about where my future investment comes from,” says IBM’s Jonathan Wright. “Because as organizations grow – and I do think we will return to growth – the supply chain of the future will be a much more robust and productive and profitable supply chain.” | **MA**