



Author: Alex Hadwick, Editor-in-Chief for Supply Chains, Reuters Events







#### Flexing supply chains' muscles

For a supply chain to truly function well it needs to be flexible, operating under a 'bend but don't break' principal that allows it to scale to needs, and to be maneuverable enough to escape blockages and delays along the route. Much like a muscle, however, this is fairly unlikely to simply come naturally. It takes preparation, training and stretching to build a muscle into something with the capacity and flexibility to go through rigorous moments of endurance or sprinting.

This analogy ran through this year's Supply Chain USA Virtual Summit, with numerous experts from across the supply chain space coming together to agree that this was a time to learn critical lessons, both from the disruption of 2020, and also from broader trends that are going to shape our space for years to come.

So, where do we need to be training hardest to create the muscle memory necessary to thrive in a modern supply chain?

First and foremost is in the overarching view we have over our supply chains and our partners across networks. Visibility now underpins the capacity of a supply chain to react to change, strengthens its ability to provide strong customer service, and allows more flexible supply chains and the introduction of automation.

By building a strong and systemic approach to the view over the supply chain then we can begin to train to become more effective in handling the new environment. That environment is changing rapidly and e-commerce growth is causing supply chains to move faster, but they have to balance the demands with sustainability goals, both of which require the right reporting capabilities in order to succeed.

#### **Training and stretching supply chains**

"If I could come up with one word across the board, that's sort of the watchword for everything that's happened since COVID, the word would be flexibility," said Karen Leavitt, CMO, Locus Robotics.

The arrival of COVID-19 has meant massive disruption all along supply chains, as well as longstanding market dynamics shifting, particularly when it comes to e-commerce.

For example, in "The development of the e-commerce and direct-to-consumer markets, what's happened in the last six months was what might not have happened in three-to-five years otherwise,"

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Robert Sanchez, Chairman & CEO, Ryder System

noted Robert Walpole, Vice President, Cargo Operations & Logistics for Delta Air Lines. "So, in all markets, there's a rapid development which has caught all parts of the supply chain sector, not so much by surprise, but certainly created some challenges."

"Dealing with risk and disruption goes hand-in-hand with the supply chain business," said Robert Sanchez, Chairman & CEO of Ryder System. "We do it every day. The disruption could be traffic-related, could be weather-related, it could be geopolitical-trade issues that are going on that make getting our product where they need to go challenging on any given day."

The level of disruption has gone up in 2020 but "Even before COVID, we've had significant disruption over the last few years that I think is going to continue to change the way we do business for the future. It's the three suspects that you all probably know: E-commerce, driven by Amazon; it's asset sharing, driven by Uber; and it's the next generation vehicle – the electric and autonomous vehicle, that is really driven by, I would say, Tesla."

Leavitt thought that the size and rapidity of change means "People now are at the point where you realize that that no matter how great a grasp you've had over the historical metrics of your business, anything could come along to disrupt it, and being able to respond nimbly to these changes is critical."

For Matt Konkle, Senior Managing Director, Head of Industry Teams at G2 Capital Advisors, this dynamic is creating mismatches in capacity and ability to deliver: "As an industry, we think of the gap

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"You have to stay nimble, you have to have alternatives, and you have to be able to enable those alternatives to meet the consumers demand."

Matt Konkle, Senior Managing Director, Head of Industry Teams, G2 Capital Advisors as a complexity gap. There's record demand [and] record volumes across this entire industry right now. So, it's a very exciting time, unlike anything in the last 20 years in this industry as it's evolved, but companies have to identify how to prioritize what complexities they are going to tackle first, [and] how they're going to get the capital to do it."

Prioritising the right strategic investments to build up capacity and know-how now will pay dividends in the future, said Ravi Dosanjh, Head of Strategic Programs at Intel. "The muscles we build in supply chains during the numerous disruptions come into play now, and I think it sounds obvious, but you need to enable the right muscle, the right capability at the right time. That's something that doesn't happen by accident. ... I think the analogy is, if you want to be good at business continuity planning, you need to treat it like recurring military parachute training. You need to do it all the time and you need to keep doing drills.... You really need to embed it."

Part of this is the overarching leadership and strategy of an organisation, but critically it must be underpinned by the right information, gathered systematically and parsed so it can be understood throughout a supply chain.

Ed Barriball, Partner, McKinsey & Company said "You need to bring together a mosaic of data," from external providers, and from within that is merged "to start to get an idea of who I'm actually buying from, or my suppliers are buying from."

"Once you have all that information," Barriball advises that you need to "understand where your vulnerabilities and risks are in the supply chain. And for a lot of folks, I think that's a new muscle to be working."

Konkle agreed that the data and enabling tech are, and will be, key, but plenty still have a way to go. "You have to stay nimble, you have to have alternatives, and you have to be able to enable those alternatives to meet the consumers' demand. Part of being able to enable those scenarios, though, is really having the technology of data right between the carriers and the shippers and being able to flex between those various carrier methods in a very nimble way that's challenging for many shippers, even today."

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"Visibility is not a solution for bad process."

Colin Yankee, EVP, CSCO, Tractor Supply Company

# Visibility the key capability to unlocking the full potential of supply chains

Supply chains might be a case of constant adjustment and managing the variables, but "What is not a variable is your need for visibility within your supply chain," exclaimed Dosanjh.

This is especially so this year, when demand can shift so quickly and dramatically.

Sanchez gave the example of one of their customers, a national chain of 4,000 co-op DIY stores, which earlier this year experienced "Spikes of as much as 70% in their volume over those initial weeks. They sold 40 years' worth of hand sanitiser in 10 weeks.

"In order to meet that demand we had to bring in additional assets, additional drivers and incorporate those into the network." This had been enabled by the institution of visibility through their RyderShare system, Sanchez noted, which had arisen because "two or three years ago customers identified the need for real-time visibility in their supply chain," as a result of the trade wars. "They identified that the ability to see your supply chain in real-time allows you to really respond more quickly to changing dynamics in the environment."

Using this tool they "Were able to quickly take all of those assets, even the existing assets, and incorporate them into that network and be able to track them in real-time, so that a store owner and member could see real-time where that next shipment was coming and they could communicate to their own local customers as to when it was coming."

This is just one example of visibility providing the critical role for the modern supply chain.

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"I think it's critical when you think about supply chain visibility technology, that it's providing visibility across all nodes. That enables network collaboration and exception management."

Dave Belter, VP & GM of Global Transportation Management, Ryder System Building this kind of capacity remains challenging, however, with supply chains frequently still fundamentally problematic in how they record and share information.

"I feel like in some ways, we're at the point that electronic medical record systems or electronic health record systems were at towards the end of the 1990s and into the early 2000s, where they were standing up all these things to capture data, but had no formality of how they talk to each other," said Russell Felker, CTO of logistics service provider and 3PL GlobalTranz. "Both of your doctors might have a way of keeping your data electronically, and they had no way to get it to each other, and so they would print it and fax it. We're kind of at that point where we have these systems that exist and that capture pieces of information, but they don't have a clear method of handing information off, maintaining chain of custody and maintaining that visibility [and] the sanctity of the information, as it traverses."

Colin Yankee, EVP, CSCO of the Tractor Supply Company explained that "There are really three consistent barriers" to greater visibility. The first is that "visibility is not a solution for bad process. So we've adopted the approach of process before technology, and trying to mature our operations to a point where the technology would be an enabler, rather than trying to layer technology on top of bad process, because we think that would lead to a false start and erode support for the overall effort.

"Second, gaps in foundational planning systems or execution systems can present barriers to building internal visibility. So that makes it hard internally, but also externally. So those need to be addressed as part of the overall visibility initiative.

"Third, ... is the quality, accessibility and fidelity of data. So whether that's internally with our own supply chain, with our suppliers, or carriers, or how a particular visibility platform is using and projecting that data, that has been a place where we've spent a lot of time so we can trust the visibility."

Dave Belter, Ryder System's VP & GM of Global Transportation Management, also emphasised that the data underpinning visibility had to stretch to the maximum possible extent and to share those findings. "I think it's critical when you think about supply chain visibility technology, that it's providing visibility across all nodes. That enables network collaboration and exception management."

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This then allows you to produce a much better idea of risk in an organisation and across its supply chain. He gave several steps as to what to do with those findings. "Firstly, you've got to identify and document the risks. A simple way to think about that is to map out and assess the entire value chain, across all the nodes - suppliers, plants, warehouses, transport routes - assess all of those nodes and identify what the potential risks are. As you do that, build out a supply chain management framework that scores those risks against three dimensions. What's the impact on the organisation if the risk materialises? What's the likelihood of the risk materialising, and then how prepared is the organisation for that specific risk? Based on that, you can develop your priorities and your action plans in terms of preparations."

Over this, "you've got to then establish a governance and a regular cadence to monitor your governance mechanism," which "may be a cross functional risk board that meets on a regular business cadence - maybe every other month, six times a year - where you're assessing your preparedness and identifying any new risks that might be essentially occurring in your supply chain."

Tractor Supply Company also took a step-by-step, systemic approach. "When we started our visibility journey, we did an exercise called 'painting the chain', where we map our level of visibility at each leg of the supply chain. We kept the goal of driving on-time and in-full performance as the primary objective, because that's super important to us. At each place where we did that 'paint the chain' [exercise], we assess the existing level of visibility we had into the status of the product. So, what do we know? And what would

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Russell Felker, CTO, GlobalTranz

you like to know about each purchase order and shipment? Then we looked at it from the transportation mode level. So how much visibility did we have? How much did we need by mode? And then how do we pull those two things together and use that product visibility, in that transportation visibility, to make better decisions?"

The next step according to Andrew Pery, Process Intelligence Expert at ABBYY, is to dig down into the processes at each stage of the supply chain and ask how do they behave? Where are the anomalies? And where do the costs and bottlenecks occur?

This is necessary, as supply chains are complex, consisting of intricate networks of input products sourced from diverse suppliers globally, currently representing \$10 trillion dollars in intermediate goods.

"Where we see a significant demand is around what's called process mining and discovery, where you actually analyse event logs from various disparate systems of record, and visualise process behaviours as they occur," said Pery. Transportation constitutes as much as 50% of logistics spending. A significant component relates to documentation processes that span certificates of origin, packing lists, dangerous goods forms, bills of lading, and customs clearing documentation. Inefficiencies and errors associated with documentation can be time consuming and labour intensive.

Demurrage charges may be incurred when shipments are not delivered, due to inaccurate or incomplete documentation.

However, Felker warns that very granular visibility can be "A double edged sword. You can get on platforms that provide ridiculous amounts of granularity, but if you surface all of that granularity all the time, all it does is become noise. You're just [experiencing] this influx of information without having importance or urgency attached to any one of the communications. So, I think when you look at the right granularity of visibility, you have to have some sort of a tool set," and ask "who am I talking to? And am I giving them the right level and degree and frequency of information, given where they are and what their responsibilities are?"

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#### Moving to the next level with process automation

Instituting visibility can produce additional benefits through moving documentation into the digital realm, embedding monitoring into physical systems and allowing for processes both big and small to be automated.



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"Research shows that good Contract Development and Management could improve profitability by up to 9% of annual revenue."

Andrew Pery, Process Intelligence Expert, ABBYY

As a process intelligence expert, Pery suggests that process discovery enables supply chain professionals to visualise the flow of documents through supply chain process stages, which means it will "surface bottlenecks and automatically generate a foundation for data-driven decisions with quantifiable process metrics, including cost, duration, and volume.

"Data-driven process discovery then enables organizations to identify areas for automation, for example through the application of Robotic Process Automation (RPA) technology, which is designed to streamline highly repetitive processes, such as contract review and approval processes". RPA, combined with the application of machine learning and AI technologies, can streamline contract review by automating the extraction of key contract terms and obligations, including force majeure, liabilities and warranties, thereby reduce contract administration costs while mitigating potential compliance risks and legal exposure.

According to <u>research</u> from the International Association of Contracts and Commercial Management, The average cost of analysing contracts is around \$7,000 per contract and it's significantly labour intensive.

Addressing this presents <u>a huge opportunity</u>: "Good Contract Development and Management could improve profitability by up to 9% of annual revenue," estimates the association.

"So, an area where organisations can really improve efficiency is the application of machine vision, OCR and document-understanding technologies" emphasises Pery, to "enable organizations to gain better visibility into end-to-end contract lifecycle management processes."

This process is being accelerated by COVID-19, which is forcing companies to focus on visibility and also to operate at distances. Sudarsan Thattai, CIO, Lineage Logistics, also found that they had to accelerate digitalisation plans due to the pandemic, and now the simple processes of driver check-in and check-out are "dying" as "We had to completely digitise that process and make it contactless.... We not only had to put in tools that made those contactless processes possible and automate several of the paper tasks, because we can keep handing paper back and forth.... One of the things that we did differently is come up with a driver mobile app right now, which is great and wonderful, because you solve" the

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"If you take the sum total of all the work that Americans do every year just shopping, for instance, mostly grocery shopping, it's about 40 billion hours a year of free consumer labour. As we move all that online, and we're going to replace that with people picking, packing and shipping items to the consumers, it's the equivalent of about 20 million full time jobs."

Tom Galluzzo, Founder & CEO, IAM Robotics

issue rapidly and cost-effectively.

Jamie Weldon, Sr. Vice President of IT Development for Coyote Logistics agrees that "it's really migrating into a world of smart process automation, instead of robotic process automation, and that's a marriage of what systems we can integrate and ... what Al we can inject into that process."

A huge part of that is going to be the Internet of Things (IoT).

"In terms of the automation technology categories, which I see coming through, I think IoT is rapidly scaling up," said Mark Singh, Co-Founder & CEO, Kaptura. Scott Price, President, UPS International, agreed, and said that "To me, the technology that has moved the fastest to implementation, and also ROI, is sensor technology," which he thinks is the only way to achieve high degrees of accuracy in sensitive supply chains elements like healthcare.

"Even five years ago, seven years ago, the devices that you would



need to put on a piece of freight to then use RFID, or some kind of GPS tracking, still had a high cost mark to them. I remember putting them on pretty expensive medical equipment, because we could justify the cost for the equipment - but we'd have to chase these things down at the end," explained Weldon. "Now with economies of scale, as these devices get cheaper," IoT devices and the associated data will proliferate.

Singh is excited by the possibilities: "We have some pretty smart external data feeds coming out of the ecosystem, taking data out of planning systems, putting it all together, and then driving the visibility story across, which can then lead to reliability and improvement in customer experience." "The other area," he thinks

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"The last mile is the most complex piece of the puzzle in supply chain - because it's the end part, everything has to work upstream for that delivery to go perfect."

Erik Caldwell, President of Last Mile, XPO Logistics

"is also coming to the fore, is in the warehouses, where we are now supplementing the people who work in the warehouses to drive improvement in speed and throughput through collaborative robots and smart variables."

This will be critical in the long-term thinks Tom Galluzzo, Founder & CEO of IAM Robotics. "We're not going to have enough labour available to do all the work. If you take the sum total of all the work that Americans do every year just shopping, for instance, mostly grocery shopping, it's about 40 billion hours a year of free consumer labour. As we move all that online, and we're going to replace that with people picking, packing and shipping items to the consumers, it's the equivalent of about 20 million full time jobs. We don't even come close to that in terms of the amount of people in the supply chain labour pool. The reality is that it's going to continue to evolve towards more automation, more force multipliers being used. Whether that's warehouse execution systems continuing to get smarter and optimising the way internal operations are run within supply chain buildings, or actually leveraging robotics to do some of the physical moving material, that's all going to continue pretty strongly over the next five to 10 years."

## Satisfying rising e-commerce expectations through micro-fulfilment

This year e-commerce has been supercharged.

The effect of this has been pressure on retailers and their supply chains to perform from the first mile to the last.

Erik Caldwell, President of Last Mile at XPO Logistics reported that "A lot of our big customers are saying they've gone two years [ahead] of their forecasts in terms of expected growth online. This translated into volumes this summer that were higher than last year's peak volumes in the big and bulky [sector and] in the last mile delivery space.... We are now forecasting something like a 25% to 30% increase in capacity needs going into this peak, and so the landscape has changed dramatically."

Leavitt noted this meteoric growth in the grocery sector as well. "At the start of the year, online grocery represented about 3% of the entire grocery sector. By May or June, that had jumped up to almost 10%, so grocery has seen about a four-year acceleration and adoption for online purchases ahead of what analysts had planned."

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This not only puts pressure on the supply chains in terms of volume, but also from consumers eagerly watching and waiting for their deliveries.

"We're seeing a strong trend toward service and service expectations," said Caldwell, setting a "new baseline", particularly "around the last mile. This is a category where you're going into the consumer's house." If it is a major purchase it is also often "a very emotional purchase, and there's a lot of feelings tied around that delivery in that purchase. So the expectation is perfection, and the last mile is the most complex piece of the puzzle in supply chain because it's the end part, everything has to work upstream for that delivery to go perfect."



This means "Customers are wanting to be informed as much as possible with any type of delays in the fundamental logistics network" said Arnaud Deshais, Chief Supply Chain Officer for e-commerce brand Redbubble. "So, what we spend our time on is to really provide the maximum available information to our customers, whether it was through email, or through our help centre, but being forward and providing customers with the information they need."

Another critical approach to try and mitigate risk and to reduce the probability of a problematic delivery that hits the relationship with the customer is to reduce the distance in the last mile, which is

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"With the recent disruption of retail and the fact that COVID has put so much stress on retailers and so forth, it's opened up an opportunity for a lot of organisations to look at how they're using their real estate in new areas, and there's a lot of real estate available on the market."

Michael Murphy, EVP of Development, CenterPoint driving change in the way distribution is done in the latter stages.

Michael Murphy, EVP of Development for industrial real estate developer CenterPoint thinks "It's really created a separate supply chain. The big DCs that would feed stores, they still exist, and then they used to run quarter of a million-footer [facility for e-commerce]. Now that's a separate dedicated distribution centre and that's feeding into the urban last mile facilities. So, for my business, it's really created a different supply chain, in much greater demand for warehouse and distribution, and then unique demand for these last-mile facilities."

"In last mile over the last couple years, we built 85 delivery hubs that are within 125 miles of 90% of the [North American] population... so we can get there in one, or at most two days when the product arrives. That's changed pretty dramatically from a metro sense," said Caldwell.

"Moving the supply chain closer to the consumer is a huge priority right now for a lot of organisations," noted IAM Robotics' Galluzzo, driving a major move towards micro-fulfilment centres.

"What it means is that we have local retailers who are now scrambling to implement programs that they thought they had a little bit more luxury of time to have to go do. So, we've seen micro-



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"We actually believe that sustainability can make financial sense long term. It does not have to be profit versus planning. It's not a war; it can be both."

Laura Nador, President, CHEP North America fulfilment centres cropping up," said Leavitt.

"The market is evolving to where they're trying to move the supply chain operations closer to the consumer. [It] is a huge shift," thinks Galluzzo, but this will too require more automation in supply chains, "because these e-commerce fulfilment centres typically require a lot of labour, sometimes 70% more labour than a regular distribution operation."

"With the recent disruption of retail and the fact that COVID has put so much stress on retailers and so forth, it's opened up an opportunity for a lot of organisations to look at how they're using their real estate in new areas, and there's a lot of real estate available on the market," explained Murphy.

This is causing Locus to have "Early conversations on the concept of the hybrid store. We think it is going to be something that will have some legs, where a store might be set aside, for instance, for consumers shopping during the day, and then for automated shopping with associates doing the picking overnight for curbside pickup the next day. Imagine using that same footprint to have this hybrid model, where you can be running different types of picking and fulfilment that really maximizes the flexibility for the customers and for the operators," said Leavitt.

#### Securing sustainable supply chains

"So many times I hear people questioning or being concerned about what is the cost of being sustainable," said President of CHEP North America Laura Nador, which for her is "a silly question".

"We actually believe that sustainability can make financial sense long term. It does not have to be profit versus planning. It's not a war; it can be both. So, if you just look at one simple example ... there are 50 billion empty [shipment] miles every year in the US alone - that means we have a \$90 billion saving opportunity. If we in the industry really make a concerted effort and collaborate to eliminate them, then it's a lot of money."

That is why they are trying to help their "customers by collaborating on transport, because where we are in the supply chain, we're in the middle of everything, [due to] the density and the size that we have and the fact that our products normally go the opposite direction to CPG products and finished products. So, we can find many opportunities to drive synergies and reduce CO<sub>2</sub> footprint by increasing collaborative transport." This represents a "real saving"

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opportunity. We were talking about trade-offs, [but] there's real money behind them."

However, achieving "that circular model on a national scale requires a very sophisticated reverse logistics engine" explained Nador. "We as an organisation have to focus a lot on network optimisation to ensure that we move those assets the minimum number of miles possible to minimise that footprint on the environment."

Jason Reiman, SVP, CSCO, The Hershey Company, also emphasised the complexity of modern supply chains and the challenges that represents for sustainability. "From my standpoint, I always tell people, take a step back and just think about and picture - what it takes to make a simple chocolate bar - and think about the millions of farmers around the world who are shipping to tens of thousands of suppliers, all the different materials to convert at one of our plants somewhere around the world, to then ship to eventually millions of consumers. And this has to happen in repetition every day.... That's the complexity of what we're orchestrating and having that right visibility to it is critical, and making sure that you understand all those different impacts."

Gert Sylvest, Co-Founder of digital supply chain services provider and facilitator Tradeshift, and GM of Tradeshift Frontiers, was also quick to point out that measurement and monitoring of sustainable goals is a vital step that must be addressed now. In a lot of organisations looking at sustainability, they see a focus on a few high-volume suppliers, within just "A few categories. Reports that come in can be on a half-year or a yearly basis. The most common form is huge PDF reports or Excel sheets and that just doesn't give you the visibility to drive any real change."

He believes this is a source of a lot of issues "because ... it's really garbage in, garbage out. If you don't get the data-driven insight, everything after that process is slowly going to erode."

This kind of data drives performance metrics are critical as we need to "listen to science, and then we make decisions based on relevant factual information," said Reiman. We then feed that to boards, who can "establish their criteria for holding the management accountable in the organisation."

"Let's get the benchmarking, let's get that consistency and reporting on what sustainability means for those organisations," he implored, but also then disseminate those findings and "see this as a journey, as opposed to a destination for your sustainability objectives."

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#### Conclusion

#### By Andrew Pery, Process Intelligence Expert, ABBYY

It's evident no matter which stage of the supply chain logistics providers serve, having good process workflow and visibility into the specific events, activities and people involved with each step is critical to successfully completing the last mile and delivering a positive customer experience.

I would strongly encourage logistic providers to be prudent and have this degree of process intelligence before deploying intelligent automation platforms to prevent the digitisation of bad processes that propagate bottlenecks, broken steps and redundancies.

In ensuring processes are delivering accurate information to enable smarter business decisions in real-time, access to critical data such as bills of lading, trade bills, waybills, dock receipts, packing lists and invoices are necessary. Unstructured forms of these nature require the use of content intelligence solutions which leverage Machine Learning (ML) and Natural Language Processing (NLP) to transform these documents into actionable content that can be used by process and intelligent automation platforms.

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ABBYY is a Digital Intelligence company. We provide a Digital Intelligence platform that enables organizations to gain a complete understanding of their business. The platform is designed to allow organizations to deploy solutions in standalone configurations or as a tightly integrated extension of industry-leading RPA, BPM and packaged application solutions.

ABBYY technologies are used by more than 5,000 companies, including many of the Fortune 500 in finance, insurance, transportation and logistics, healthcare and other industries. ABBYY is recognized as a market leader in Intelligent Document Processing (IDP) and Process Discovery & Mining for driving impact where it matters most: Customer experience, effectiveness, profitability and competitive advantage.

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