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"Digitalization is instrumental for getting the visibility into the supply chain to respond to unforeseen changes."

Dr. Markus Voss
Chief Information Officer and
Chief Operations Officer, DHL Supply Chain

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Making digital supply chain a reality

Each month we speak to a different industry leader about their approach to innovation and the emerging trends impacting the industrial sector. For this edition we talked with DHL Supply Chain's CIO and COO, Markus Voss, about digitizing supply chains, and how his teams are leveraging data and advanced technologies such as robotics solutions, machine learning and generative AI to enable supply chain resiliency for their clients.

De-risking supply chains through digital

Serving the growing clamor for customization

Applying advanced technologies in logistics

The future of contract logistics

In conversation with DHL Supply Chain's CIO and COO, Markus Voss

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World events are combining to form what feels like a perpetual storm of disruption for supply chains. This will continue to test the ingenuity, resilience, and flexibility of supply chain leaders. Their goal: to maintain supply chain networks so that customers get their goods when and where they need them. We asked Markus Voss, who holds a dual role as CIO and COO at DHL Supply Chain, how the company is driving its digitalization agenda and the standardization of supply chain operations to reach that goal.

DHL Supply Chain is recognized as a front-runner in warehouse robotization. But the company's commitment to innovation extends beyond its current achievements, as it continuously introduces more digital solutions

and explores further possibilities within the area. "Now we're examining all the other elements of the supply chain to see where robotics can help us. There is a lot more that we can do, especially when it comes to orchestration: ensuring that our different solutions work very well hand-in-hand, and support the people who are working on our sites on the most flexible tasks." In addition to robotization, Markus talks about how DHL Supply Chain is building a data ecosystem across its warehouses and services, and how it is using advanced technologies such as digital twins, machine learning and generative AI for competitive advantage. He also shares how the company is responding to customers' evolving demands for tailored services, speed and quality.

Can you give us an overview of your organization?

DHL Supply Chain is one of five divisions of the DHL Group—the world's leading logistics company, with 600,000 employees in over 220 countries and territories across the globe. Our division, DHL Supply Chain, is the world's largest contract logistics provider. Our activities include running warehouses, doing transportation, providing value-added services such as packaging, and really taking care of the entire supply chain from end to end. I would say that we have had a hand in most of the items that you use daily, or the clothes you wear. At some point in their cycle, from the raw materials to where they are produced, to the end-point consumption, I would guarantee they have been in the hands of one of our employees.

You have two roles—Chief Information Officer and Chief Operations Officer. This is an interesting combination. What is your mandate, and what changes do you need to make?

My role was created because it's a general rule of logistics that nothing works without IT, but the IT doesn't work without operations.

And so I'm responsible not only for our systems, but also for the way we run our operations, our processes, how we drive standardization, digitalization, utilize the right data and analytical insights and so on. Digitalization doesn't work without IT, nor does it work if the IT is not adopted by operations. We have more than 2,000 warehouses and transportation services around the globe, and my job over the past couple of years has been to ensure they all work strongly hand-in-hand, and in the same way.

Recent global trends have exposed the vulnerability of supply chains and forced businesses to re-evaluate how they de-risk their networks, get their goods to customers on time and in good condition, and of course maintain profits. How has digital technology helped you ensure that?

I couldn't agree more. The pandemic and incidents like the blockage of the Suez Canal (in 2021) made people a lot more aware of the importance of supply chains and their dependence on perhaps a single supplier—and the potential impact on their customers when things don't go according to plan or the unforeseen happens.

I'm really excited about how we have been able to support our customers in all this volatility. This is when digitalization was so instrumental—giving them visibility into the supply chain to respond to these events. We could tell them, "This is where your inventories are, this is what you can do to bring them in in other ways." Many of them had to rethink their overall supply chain, put a map on the table and say, "Okay, maybe one supplier for a certain item is too risky." They had to make their supply chain more resilient. And we could help them do that because of our infrastructure; because our technology gave them the visibility to see what needed to be done.

Digitalization is absolutely crucial, because it allowed us to keep the world going. It was sometimes difficult and more expensive, especially in the crunch times when there was no capacity in the air and on the ocean. But even then, visibility allowed us to see where things were, what needed to be done and how we should plan for it. And of course it helped that, as a global group, we had a much more holistic view of the world and how we could help.

Your division is organized by industry verticals. How do your customers differ in terms of what they want from you?

We serve not only blue-chip customers but also rising stars in every important vertical.

Even though our clients differ in many respects, I always see they have two important things in common: interest in digitalization and ESG (Environmental, Social and Governance) issues. Digitalization is especially important for our big multinational customers, because it gives them the resilience and the supply chain orchestration they're interested in. They don't just look at one warehouse or a single process; end-to-end supply chain management is where we can have a material impact on their business.

When it comes to smaller customers, it's the ability to use our infrastructure to help them grow faster and get into new markets more quickly. If they operate in one part of a single country and want to expand into another country, it's always a burden to have to get to know the market, build relationships, set up warehouses and stock them with inventory. By fast-tracking this process and setting up these facilities we can take out the risk—it's all ready-made, digital, reliable and proven, because we do this 400 to 500 times a year for our customers. And it all goes hand-in-hand with the visibility and transparency that I've mentioned.

Your organization is recognized as a front-runner in warehouse robotization. How important is that for you, and what are your next steps?

This is a big passion of mine. We started to accelerate our digitalization initiative about four or five years ago.

At that time, we were piloting robotic solutions in parts of the supply chain; for example, a few piece-picking robots which we had seen were working very well in the e-commerce sector. Today they are broadly deployed at scale—I'm very proud to say we have more than five-and-a-half thousand assisted picking robots across all our sites. I'd almost say this is no longer an innovation for us, because wherever we do piece-picking we look to introduce robotic solutions. Currently we have more than 8,000 projects deployed, including wearable digital solutions. Now we're examining all the other elements of the supply chain to see where robotics can help us. There is a lot more that we can do, especially when it comes to orchestration:

ensuring that our different solutions work very well hand-in-hand, and support the people who are working on those sites on the most flexible tasks.

I'm really excited at the prospect of end-to-end orchestration, which will ensure we do the right things at the right time with the right solutions. We are choosing the right technology and working very successfully with a growing number of partners. Our customers are happy because they don't have to try out a solution and hope for the best—we make sure it works for them. And our associates just love to work in a modernized environment where robots are helping them with what can sometimes be very strenuous work. We're not at the end; there's even more that we can do, and we're continuing to introduce more and more solutions into our supply chain.
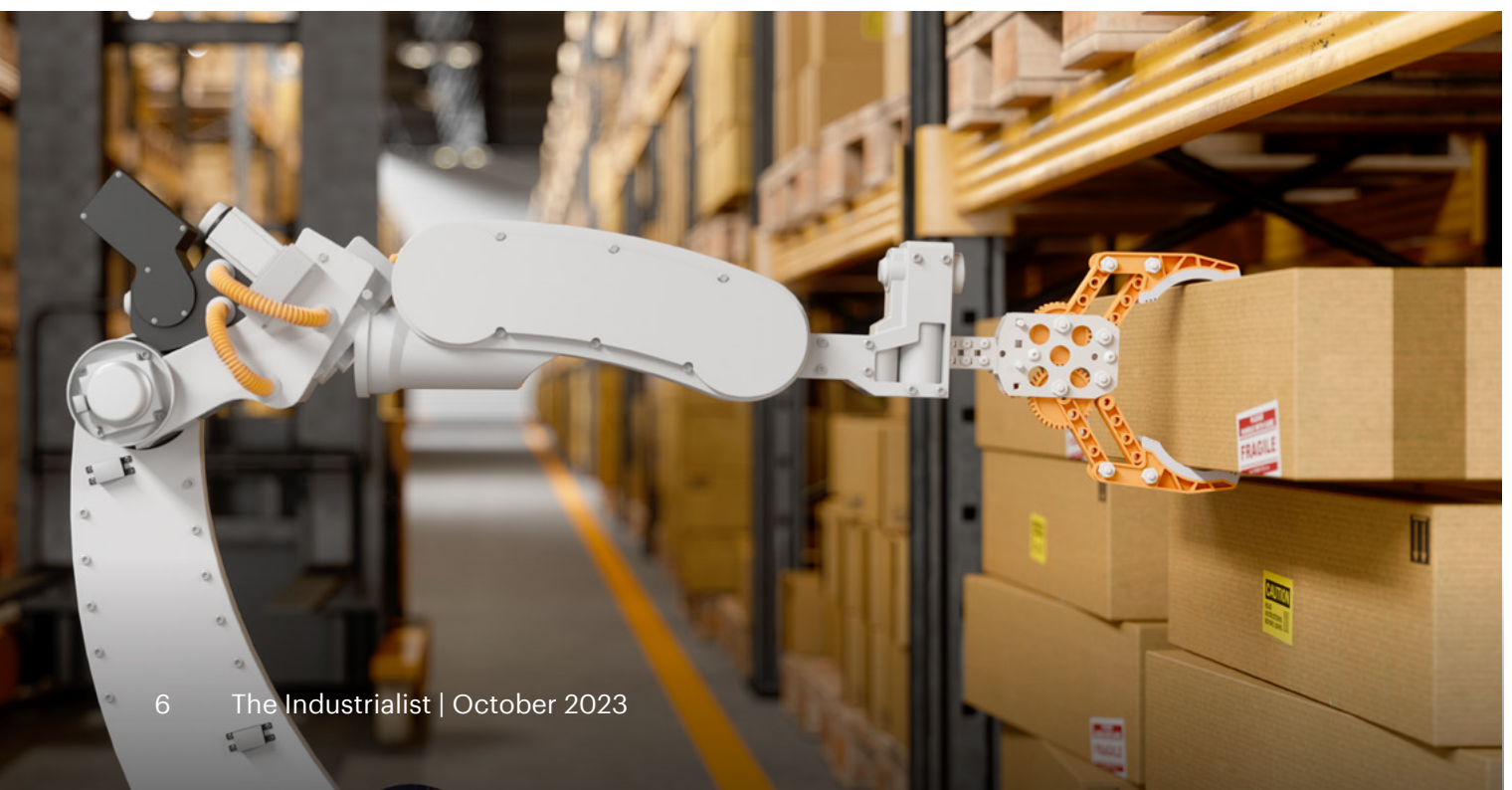
With digitalization you must have gained a lot more data. How are you using data analytics, machine learning and generative AI to achieve greater visibility, flexibility and resilience?

Yes, every one of our solutions generates a lot of data, and we use this daily to make better decisions.

I'm really excited about the potential to do even more with it. Supply chain has traditionally been very local; deployed differently depending on where you are and what your needs are. We are building a data ecosystem that includes all of our sites and pulls together data from multiple warehouses and transportation systems. By leveraging this we will be able to make a very strong difference. We are also starting to build digital twins and use machine learning algorithms that are using this data for competitive advantage. For example, there are still many very specific tasks in logistics that require sampling: going to a particular place in the warehouse and confirming that what we have there is actually what's on our systems. Perhaps someone has taken it and not recorded it. We are exploring sophisticated machine learning solutions

that can predict where problems are most likely to occur, such as identifying the products that are more error prone or likely to be mixed up and require more frequent recounts. It's also very important that we understand what generative AI can do for us. We're looking at using generative AI for our RFPs: understanding what a potential customer really wants, how we can match that with what we have to offer, and building the solution.

But let's not be naïve. With data comes risk—which needs to be mitigated. The more devices you have generating data, the more endpoints you have that are potential targets for an attacker. So in my role as CIO, I'm putting a lot of effort into protecting our environment. If you look at things like our Bitsight Security Rating, it's way higher than many of our competitors. But of course hackers only need to get it right once; we need to get it right every single time.

We're all seeing an increase in the demand for customization, adding complexity to post-sale services and support. Can you give any examples of how you are helping your customers with non-standard service capabilities?

Speed and quality are always things that our customers crave.

For example, if you're manufacturing a device with software or firmware built in, you want to serve your customers with the very latest version, which is tailored to the specific needs of the local markets—and you want to get it to them quickly. That's not always possible if you are manufacturing at the far end of the world relative to most of your end-customers. Lead times for shipments can be up to six to eight weeks, so by the time the end-customers get the item it could already be two months old. What we are offering as a service is the ability to put the final touches to your product in a local warehouse that's very

close to your customers; load the latest or locally relevant software or technology kit so that your customers always get the very latest and greatest experience. Another example is around our service logistics: It may be a spare part that brings a production facility to a standstill unless replaced or a medical device that's essential for a certain type of procedure. When you need a replacement very, very quickly, we have built a global network of service logistics locations that can supply the device or spare part in a dedicated time window of two to four hours. This very high-speed availability of the solutions to our customers either on the end-consumer side or when it comes to manufacturing is very important.

You said that in addition to digitalization, all your customers are interested in ESG. What is DHL Supply Chain's approach to the sustainability agenda?

This has been a priority of ours already for the past 15 years, when we first launched our GoGreen program.

Long before everyone started talking about the impact of global warming, our commitment to the planet was a key element of our strategy. And we're putting a lot of money where our mouth is—we have pledged to invest €7 billion to decarbonize our supply chains by 2030. It's not simple; sometimes the solutions are just not ready. We've been looking hard at electrifying aircraft, but the technology truly isn't there yet. So right now, sustainable fuel is the only option to decarbonize aviation.

Like many other companies, we have science-based targets. We have set ourselves very concrete goals to decarbonize our operations, which will be fully decarbonized by 2050. But I don't think we have that much time. We need to move a lot faster and we have to measure every single item. We're investing heavily in a new fleet, looking into things like CNG (compressed natural gas)-powered devices and fuel cells for the mid-to-long range and obviously electrifying the last mile. Some of these solutions are still at an early stage, but we have to get it done. As we did with digitalization, we started with early pilots which were quite interesting and successful. But now we need to scale into our big operations. We owe it to our planet, and I think we owe it to our investors as well. They're expecting it.

Where do you see the contract logistics industry going in the future? What trends are likely to have the biggest impact in the coming years?

The industry is becoming more complex while digital and sustainable solutions are deployed.

We've talked about resiliency, and orchestration of robotic solutions which requires expertise. And the complexity will only increase as the trend of customers switching from one to multiple suppliers grows. Because of these factors, I believe the outsourcing of logistics to companies like ours will only increase. In my view at least, more businesses are realizing their core competence is product development and the marketing that goes with it, not logistics. You give it to those people who do it every day and who are expert at dealing with this complexity.

Over the last years, the investment in supply chain technology has increased more than 400%, from €6 billion to €24 billion. A lot of money is going into start-ups that are building the next generation of digitalized supply chains, and we're taking those solutions and putting them into real operations and making them work. It's a fascinating space, and I'm very proud that we're helping make the digital supply chain an everyday reality.

Markus, to conclude, what one word describes you best? And what, as a person, inspires you most?

That one word would probably be "curious." As for what inspires me, there is no question—it is the teams that I work with. They constantly push the envelope, bring new ideas to my table and to our business. When we first talked about generative AI, it didn't take a heartbeat for many of them to embrace it and really give it a try. What we have achieved over the last couple of years is just incredible, and it's all thanks to my team.

In closing

It's certainly no longer "business as usual" for supply chains. Organizations are being forced to address new challenges and priorities like rising geopolitical tensions, growing consumer demand and other uncertainties and disruptions, that existing supply chain capabilities aren't capable of handling.

So, what should industrial companies do to future-proof their supply chains?

First and foremost, industrial companies need to gain real-time visibility into their supply chains. This visibility helps identify potential disruptions early, allowing for proactive responses. In fact, our research has found a strong correlation between visibility and resilience: those companies with greater supply chain visibility tended to be more resilient and are for sure more reliable. The research also shows companies need to increase supply chain visibility across two dimensions: structural and dynamic. Structural visibility—think what your supply chain looks like?—helps with getting a snapshot into operations at a point in time or over a certain period. Through dynamic visibility—think what's happening right now?—industrial companies can monitor and respond to events in real-time, helping them to see e.g. where products are across the supply chain, how plants and warehouses are running, etc.

Both together lead to intelligent visibility, when supported by data analytics and AI. By analyzing historical data, using predictive algorithms, and monitoring market trends, industrial companies can foresee shifts in demand and adapt their production schedules accordingly. And then it is about risk mitigation: organizations can identify potential risks such as supplier vulnerabilities or possible challenges caused by geopolitical instability or natural disasters with the help of data analytics. Intelligent technologies and connected end-to-end data, when combined and scaled, can add significant value to industrial companies' supply chain. This combination harmonizes the supply chain, generates new efficiencies and operational capabilities, and frees up capital to invest in innovative business models that foster competitive advantage and drive profitable growth.

The role of logistics companies in this process cannot be overstated. Their ability to collect, analyze and share data, combined with their tailored services and expertise in operating in the ever more complex environment, is instrumental in creating resilient and efficient supply chains. That point has come to life in this edition of the Industrialist featuring DHL Supply Chain's Markus Voss. At the same time, he stated that "it's a general rule of logistics that nothing works without IT, but the IT doesn't work without operations." It became clear that only when operations functions are at peak performance, the compounding effect creates outsized business value.

As industrial organizations continue to navigate the complexities of global markets, the synergy between data, IT and operations, and the interplay with logistics companies will remain a critical driver of success in the manufacturing value chain.

Best regards,

Thomas Rinn
Senior Managing Director,
Global Industrial Lead, Accenture
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