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MAERSK



Global supply chains are facing
a perfect storm of disruption

“There are many external events affecting the supply and logistics industry. We are in a perfect storm situation.”

**Rotem Hershko, Senior Vice President
and Head of Business Platforms at Maersk**



A disrupted world

On 23rd March 2021, the container ship Ever Given ran aground smack in the middle of the Suez Canal. The accident blocked the maritime thoroughfare for six days, as a queue of 369 ships formed behind the beached giant, resulting in a supply-chain disaster. Sixteen million tonnes of cargo freight were delayed, and about \$9.6bn worth of trade was lost. That disruption came on top of a pandemic, geopolitical tensions, and extreme weather—a cascade of “black swan” events that created shortages, delays and disruptions for businesses and ordinary people across the planet. If the past few years have taught us anything, it is that supply chains matter—and they are not as resilient as we thought.

“What we have observed over the last 18 months with the Suez Canal blockage, Covid and then the implications of Covid, with ports being congested or shut, is that there are many external events impacting the industry,” says Rotem Hershko, Senior Vice President and Head of Business Platforms at logistics giant Maersk. “We are in a perfect storm situation.”

The vulnerability of supply chains may come as a surprise to many—we live in a world where digital technology seems to be transforming nearly every aspect of our lives, and logistics is a sphere rich with talk of innovation. However, this essential digital transformation has yet to penetrate much of the industry—look closely and you’ll see that an unexpectedly analogue, paper-based model still prevails.

Facing up to the challenge

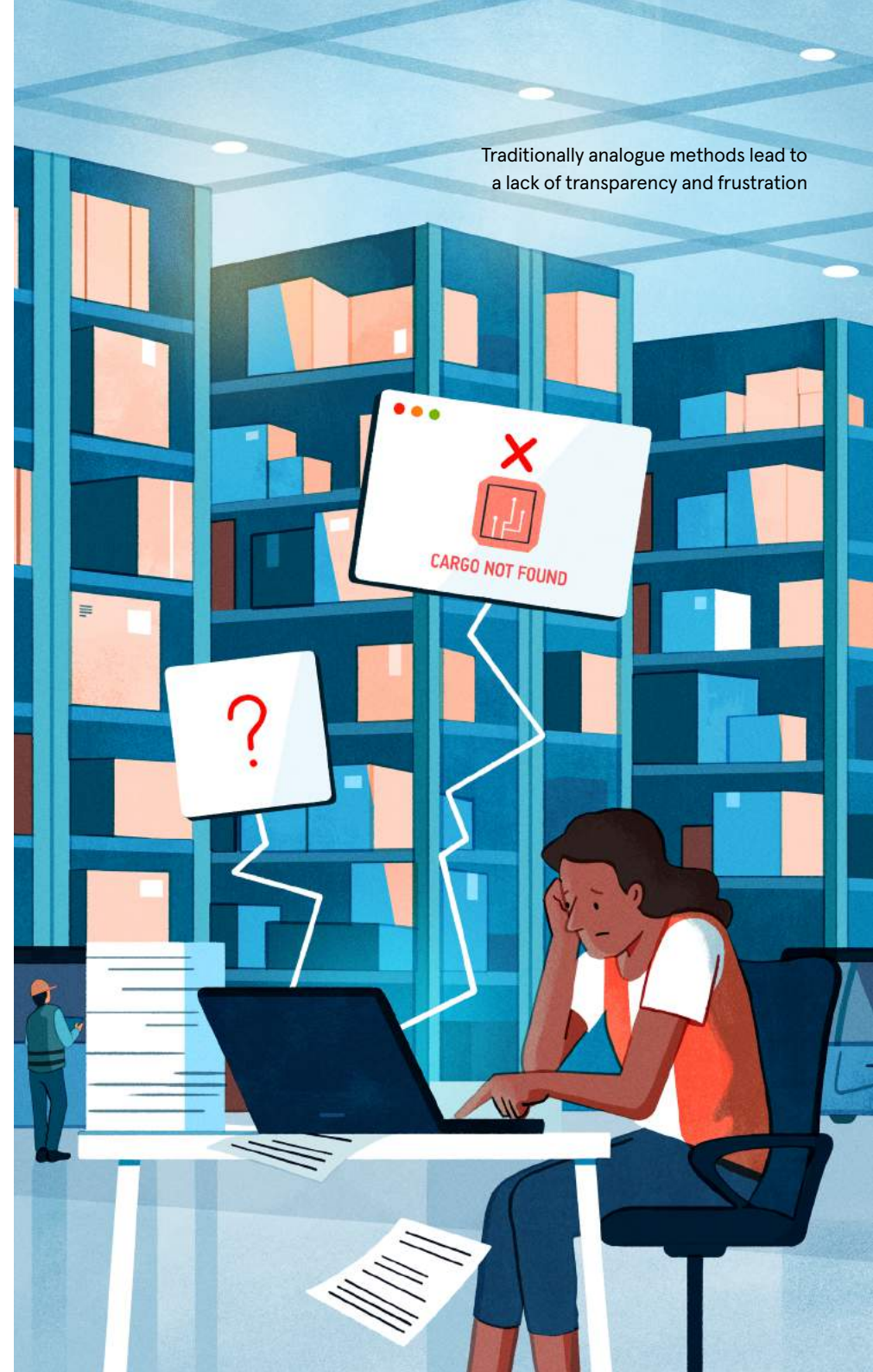
“Some companies are just a bit ‘old style’,” says Dr Özden Tozanli Yilmaz, a researcher at the Centre for Transportation and Logistics at the Massachusetts Institute of Technology. “But even when it’s not ‘old style’ companies, some organisations in the sector are simply lacking state-of-the-art management in order to move towards digital transformation.” The prevailing mindset is one that’s all too common among business-to-business organisations: introducing new tools to better serve the needs of their customers is not necessarily a priority.

There is also a more fundamental reason why supply chains look behind-the-times—they are formidably Byzantine systems, so there are no quick fixes. “One of the big challenges in the industry is the lack of transparency: different activities within the supply chain are generated by many partners, and from the customer perspective, some of them are known, some of them are unknown,” says Kaisa Tikk, Global Senior Sustainability Advisor at Maersk. “So creating that visibility is very complex—but visibility is a crucial prerequisite for many other things that need to follow. Think, for instance, of decarbonisation: if you do not have visibility of your emissions, how can you reduce them?”

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Traditionally analogue methods lead to
a lack of transparency and frustration





Data and technology are the key to efficient and resilient supply chains

How digitisation can revolutionise supply chains

In order to face up to future “black swan” events, these problems must be urgently overcome. Digitisation—and the shift in mindset that both drives it and derives from it—has now become essential. The industry has learned that the hard way. “All these disruptions have caused a rethink of how to become less dependent on human resources, and how to find ways to move the supply chain when employees are ill or there is a labour shortage,” says Professor Michael Bourlakis, Chair in Logistics, Procurement and Supply Chain Management at Cranfield School of Management. “One of those ways is investing more in digitalisation and automation.”

That’s why, right now, the world of logistics is experimenting with technology like never before. Maersk itself began its transformation before Covid hit and has thus become a pathfinder for the industry. Rotem Hershko joined the company in late 2020 following almost eight years at e-commerce colossus Amazon, and he says he is just one of the several hundred engineers and over 50 tech executives who have been joining Maersk from Silicon Valley giants and innovative tech companies over the last 12 months.

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In Hershko's opinion, that is happening because supply chains have never been as impactful as they are today. "By leveraging technology and platforms in an effective and meaningful way, you feel like there is a huge opportunity to really move the needle tremendously for customers and the industry as a whole."

Emerging technologies are playing a meaningful role in that effort. Take TradeLens, a blockchain platform developed by Maersk in partnership with computing giant IBM. A blockchain is a digital ledger, first pioneered in cryptocurrency, that works in a decentralised fashion, allowing a plurality of parties to co-create a single source of truth without relying on a central authority. Given the vast array of actors in the supply chain sector—shippers, freight forwarders, port authorities, terminals, ocean carriers, intermodal operators, governments, customs brokers—and the need to share different information and data throughout a cargo's journey, all kept on one unified platform, blockchain is ideally suited to addressing the problem. Say you were shipping a cargo of T-shirts; if you were wondering exactly where it is, the



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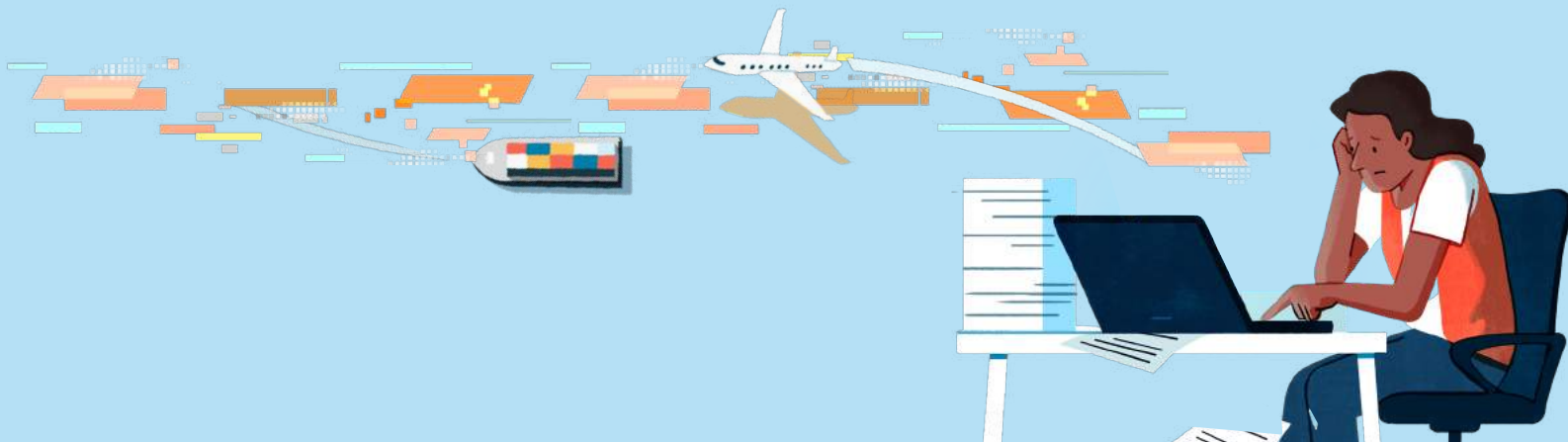
system would give you the precise location and retrace the digital "paper trail" left in its wake. "[TradeLens] streamlines all the different transportation data in order to have it for customers to access it, to use it, to leverage it," Hershko says. "So, we can provide customers with end-to-end visibility of where their cargo is no matter where it is in the supply chain, including aspects of the journey which is managed by other parties."

There is another clear strand of cutting-edge innovation happening in the industry. "Artificial intelligence, analytics, and big data are very high on these companies' list of priorities," says Professor Bourlakis. Delays and disruptions can be forecast and prevented by harvesting better data from a whole host of sources and using AI models to find a way around them; AI can also be harnessed to streamline vessel and container packing, saving space and money. Maersk's customer-facing online "[Logistics Hub](#)", for instance, features an AI-enhanced interactive map that predicts when vessels will arrive in ports.

If AI is the industry's buzzword of the moment, a close second would be "digital twin". This is a method to model, simulate and stress-test a process or an organisation—whether that's a trade route or a marine terminal—and Bourlakis calls it one of the "major applications" for the increased troves of data that companies in the industry are collecting. That means if you are a company importing automotive parts, you could create a digital twin of the supply chain that brings those components from a Chinese factory to your shop floor, and this would help predict the risks and snags that could beset it. Once you know what those are, you can put countermeasures and fail-safe mechanisms in place to mitigate disruptions. Alternatively, if you operate ships, you can create a digital twin of each one to work out how to improve its performance and minimise carbon emissions. Maersk offers this service for shipowners who have entrusted the company to manage their vessels.

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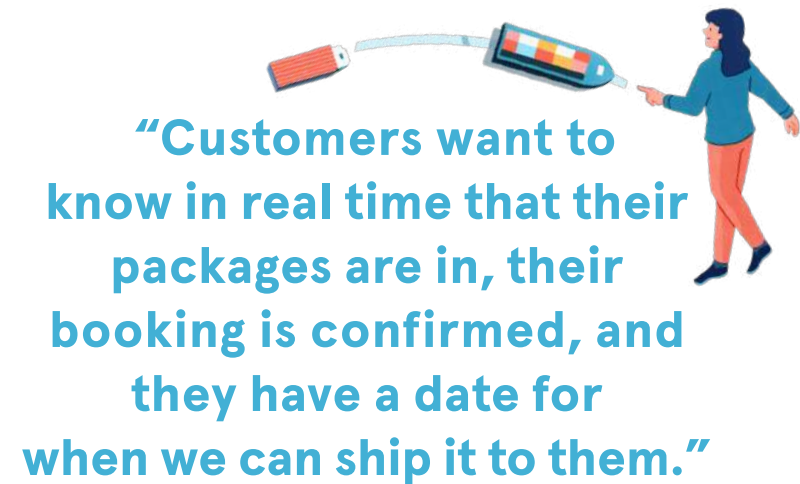
The race for net zero

The climate crisis is yet another reason why the sector as a whole is rushing to embrace digital transformation. Global supply chains of eight key industries account for more than 50 percent of annual greenhouse gas emissions, according to Boston Consulting Group. But solving that isn't just an environmental imperative, it's also a commercial one: customers themselves are increasingly clamouring to be more sustainable. "Two thirds of our 200 largest customers actually have net zero targets at the moment," Kaisa Tikk says. "A year ago, that number was roughly 50 percent. So, there is a massive acceleration from the customer side to be very serious about the sustainability agenda."

In response, Maersk unveiled its Emissions Dashboard in 2021, a one-stop-shop tool where customers can get visibility for how much CO₂ the movement of their goods is producing. Based on this data, they can also receive suggestions for how to reduce their carbon footprint. "This visibility tool supports customers by pointing out specific trade lanes and locations, carriers and modes of transportation that were responsible for the majority of their greenhouse gas emissions," Tikk explains. Maersk itself is fully committed to hitting its net-zero target by 2040 and is investing heavily in research and development in green tech and alternative green fuels such as biodiesel, green methanol, and green ammonia.

Starting with the basics

Helping customers meet their sustainability targets is just one area that reflects a wider shift at Maersk: reorienting itself away from the industry's default "business-to-business" mindset and towards a "business-to-consumer" one. To Hershko, this is the guiding force of the company's digital strategy and it's why, for all the new technologies, this overhaul puts no less emphasis on customer experience.



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"To start, one just needs to look at the basics of creating customer value and make sure that they are covered," Hershko explains. For this reason, Maersk.com has been redesigned, streamlined and debugged to offer customers a digital way to book, contract and engage with the company. "We measured latency and uptime and number of bugs in tickets: we were able to end 2021 40 percent better in our uptime versus 2020," says Hershko. Instant booking was another big step ahead: in 2021, Maersk kick-started an effort to allow more customers to book their services through digital channels and receive immediate feedback. "Customers want to know in real time that their packages are in, their booking is confirmed, and they have a date for when we can ship it to them," he says. Following the update, in 2021, now more than 70 percent of Maersk's bookings take place via self-service digital channels, booked directly by customers.

Yet another piece in Maersk's digital jigsaw is a new version of its mobile customer app. "These customers are the same people that are, you know, engaging with their online banking app at 8:30am," Hershko says. "And then when they want to engage with Maersk at 8:45, they aspire to have a similar experience on their mobile app. There is no reason why for Maersk they need to pick up the phone. Mobile obviously is the right channel for that. Which is why we re-architected and invested heavily in our mobile channels in 2021, and customers have made ten times more bookings through mobile in 2021 than 2020. And that's just the starting point."

Tikk thinks it's not only competitors who might decide to take a leaf out of Maersk's customer-centric, digital playbook—it is the whole ecosystem, and often collaboration can enable better outcomes. "Some of our technically advanced customers are keen to co-innovate with us—to co-create or test solutions to improve emissions visibility, predictability or fuel optimisation, just to mention a few areas," Tikk says. "So that's also a new pathway."

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The future of the supply chain and logistics industry needs to be digital

Looking ahead

Over the years to come, what will define the ideas that endure across the industry is that they won't be innovation for innovation's sake. MIT's Dr Özden Tozanli Yilmaz has a clear sense of where efforts should be focused: "From a researcher's point of view, the most value we can get out of digitisation is improving our prescriptive analysis: how we can be more predictive, how we can understand customers' purchasing behaviour, how we can forecast demand, how we can meet the service level at a given range." In turn, this will provide those in the industry with ever more personalised solutions that will drive greater efficiency and effectiveness within the supply chain—whether that's forecasting routes even more intelligently to avoid disruption or finding new ways to minimise fuel consumption.

In the next few years, Bourlakis says, we should brace for a monumental change in how companies in the logistics industry operate. "The whole sector will change fundamentally. We'll be looking at different supply chains, different practices, different approaches, and better customer service and customer deliveries," he says. "Technology will be a key aspect of that. I expect many companies, even smaller companies, to finally implement digitisation in their operations." At the end of this transition, customers will have found a newly central role. "The sector will be driven by customers' demands," he adds. "We'll have to move from supply chain management, to 'demand chain' management."

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For many other sectors, this future is already here. “If you look at the commerce sector and everything e-commerce has done for it, if you look at the banking industry and everything that e-banking has done, I believe that it is a natural evolution: all industries are going to be digitised eventually,” says Hershko. “We are just a little bit late to the game.” Still, better late than never. As the “perfect storm” of the last few years continues to rage, the impact of black swan events has never been clearer—and the need to strengthen global supply chains never more pressing.

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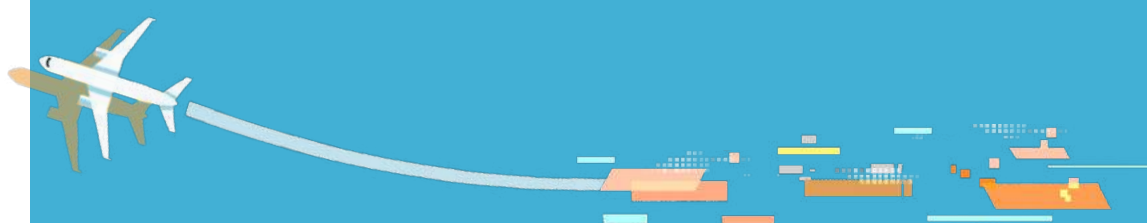
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