



Delivered.

THE GLOBAL LOGISTICS MAGAZINE

ISSUE 04/2018

BUSINESS

ETHIOPIA RISING

Learn what is driving one of Africa's greatest success stories

SOLUTIONS

A MATTER OF TRUST

How leaders can kickstart a culture of confidence

VIEWPOINTS

DATA PROCESSING

Discover what analytics can do for your business



THE HIGH LIFE

The towering logistics challenges of offshore wind power



DEAR READER,

Did you know that offshore wind power grew by a spectacular 25 percent in Europe in 2017? That’s good news for our planet, but building giant infrastructure offshore has created some complex logistics challenges for the energy sector. Our **Energy focus** explores how new processes and supply chain solutions can overcome these and help the industry to thrive.

Renewable energy is also powering up Ethiopia, which has emerged as one of Africa’s great development success stories. The country has started tapping its enormous hydropower potential, which could be a real game changer for a nation where extreme poverty and wealth live side by side. But there is much more to discover in what is one of the world’s fastest-growing economies, as our country report **Ethiopia: On the right track?** highlights.

Meanwhile in e-commerce, power comes in an entirely different form. Take, for example, the spending power of an ever-growing group of busy, cash-rich and time-poor urban professionals. **The rise of the urban consumer** explores how e-commerce businesses can win this demographic over.

I wish you an enjoyable read!

Sincerely,

Katja Busch
Chief Commercial Officer, DHL

Cover photo: Bernt Hoffmann/euroluftbild/akg-images

Photos on this page: DHL; Luca Locatelli/INSTITUTE; Jan Grarup/laif; Moyo Oyelola



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PUBLISHED BY DEUTSCHE POST AG

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Registration court Bonn
HRB 6792

Turnover Tax ID No.
DE 169838187
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Paper
This magazine is made from
100% recycled paper.

We are committed to
protecting the environment
and the world’s resources.

Print
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17207 Röbel/Müritz
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The icons above indicate additional online resources.



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GOING WITH BOEING

DHL Express is set to strengthen its intercontinental network with an order for 14 new Boeing 777 freighters, the most fuel-efficient and technically reliable cargo aircraft of its kind. The deal, which was announced at the Farnborough International Air Show, includes an option to buy a further seven planes to support the expanding cross-border e-commerce sector. In the past, DHL Express has chiefly leased aircraft to operate its global network, but the purchase of fully owned freighter aircraft will improve the cost position of the Express division going forward. The first four planes are expected to be delivered next year. According to Ken Allen, CEO, DHL Express: “The acquisition of the 14 Boeing airplanes reflects a gradual replacement of our older intercontinental fleet. As the most fuel-efficient, most reliable freighter type with the best long-haul range, these aircraft will contribute to our emissions

reduction targets and allow us to serve even more markets with non-stop flights.” Boeing’s 777 freighters are the largest twin-engined cargo planes in the world, and can fly 9,070 kilometers (4,900 nautical miles) with a cargo of 102 metric tons. They will also cut carbon emissions by 18 percent compared with the planes they are replacing, helping toward DHL’s 2050 sustainability target. Global e-commerce sales are expected to grow to €3.84 trillion (\$4.48 trillion) by 2021, so the new planes will enable DHL to answer the increased demand for global express capacity. DHL Express operates more than 260 dedicated planes with 17 partner airlines on more than 600 daily flights across 220 countries.

 bit.ly/dhl-express-boeing

ALL-SEEING-IT

DHL Supply Chain has launched a new digital platform that will enable customers to have full end-to-end sight of their supply chain. MySupplyChain integrates data from DHL’s supply chain applications to offer customers complete online visibility through a single login, anytime, anywhere. Initially available to customers in North America, the system will roll out to other regions in the near future. Customers can access track-and-trace data, inventory, operation performance and reporting, business analytics, as well as customer service, from any desktop or mobile device. They will be able to follow shipments from warehouse to final delivery, all in near-real time.

 bit.ly/dhl-mysupplychain

THE NEW SILK ROAD

When the great explorer Marco Polo traveled the Silk Road in the 13th century, the prospect of transporting goods from China to Austria in just 15 days would have seemed an impossibility. Now that the Silk Road trade route is enjoying a resurgence, DHL Global Forwarding is preparing to launch a new rail network to tap into rising trade along the economic belt between Europe and Asia by signing a memorandum of understanding with Rail Cargo Group, the freight division of Austrian Federal Railways, to provide a direct connection between Vienna and Chengdu in China. At the end of April, a 600 meter container train made its inaugural 9,800 kilometer journey from Chengdu’s Qingbaijiang railway station to Vienna South Freight Center. Rail containers on the route will benefit from remotely monitored temperature control, real-time tracking and fully managed customs clearance.

 bit.ly/dgf-rcg-belt-and-road



IT TAKES TWO

Ethiopia’s logistics infrastructure is soaring even higher with the recent joint venture agreement between DHL Global Forwarding and Ethiopian Airlines, the largest aviation group in Africa. The partnership will see DHL utilize the airline’s regional expertise to open the African country’s booming economy to more international trade connections.

Currently in the midst of a five-year infrastructure and export-focused development plan, Ethiopia expects to establish two million manufacturing jobs by 2025 across sectors such as pharmaceuticals, garments and automotive production. DHL Global Forwarding’s agreement makes it the world’s only international forwarder with a local presence in the country.

See our feature on Ethiopia on page 22

GET YOUR CLICKS

E-commerce is becoming increasingly international: In 2017, some 70 percent of on-line buyers made a purchase from an international site. With this in mind, DHL Express has launched a global digital campaign, Where Everything Clicks, to help businesses increase their share of the trillion-dollar global e-commerce market.

 discover.dhl.com/e-commerce.html



GOING FOR GOLD (TOP)

The humble milkman, once a mainstay of British life, looked to be an endangered species. But, thanks to moves by many people to shop locally and sustainably, the early morning pint of milk on the doorstep is enjoying a renaissance. The U.K.’s largest milk delivery company Milk & More now makes 1.5 million deliveries to 500,000 households every week. To achieve this in an environmentally friendly – and quiet – way, the company has bought 200 electric vehicles from DHL subsidiary StreetScooter. The Work L model has a box van-style body with a refrigerated eight cubic meter volume, and keeps its left-hand drive configuration so that the milkman (or milkwoman) can get in and out safely on the pavement side.

 bit.ly/streetscooter-milk-and-more



Photos: DHL (2); Xinhua/dap; Johnner Bildbyra/vario Images; Adobe Stock; Jake Eastham/DHL; argum/imago



DRIVERLESS TRUCK LOGS ON

Swedish transport company Einride is launching a new version of its T-pod self-driving truck, this time aimed at the logging industry. The T-log, as it will be known, can take bigger loads because it doesn't need space for a driver's cab, and can run solely on batteries for a range of 193 kilometers (120 miles). Powered by Nvidia's Drive AI platform, it will be able to access real-time traffic data to plan its route. Should a human operator need to step in, they can do so remotely, even on a device just using mobile data.



www.einride.tech



ENTHUSIASTIC ABOUT PLASTIC

8.3 billion metric tons of plastic have been produced since the 1950s and, alarmingly, three-quarters of it still exists as waste in some form. Now scientists from Canada have developed a quick process to melt plastics into a combination of organic acids capable of being reused for further goods processing. BioCellection, a start-up using evolved bacteria to eat plastic, now offers liquid catalysts to break down film plastics – one of the worst contributors to plastic pollution. The company is currently scaling up their process to convert 30 metric tons of plastic film waste in California across a three-month pilot scheme starting March 2019.



www.biocellection.com

MOBILE MANIA

Demand for smartphones is surging in India: the market grew by 14 percent last year, with 124 million new phones being shipped. Electronics giant Samsung is tapping into this with the world's largest mobile phone factory, which it opened in Noida on the outskirts of New Delhi in July. When fully operational in 2020, it will be able to make a staggering 120 million phones a year, which will help answer the clamor for handsets from the 1.3 billion-strong population. Crucially, in a country where many incomes are low, Samsung's new plant will make everything from the company's flagship S9 model down to low-end phones that cost less than €86 (\$100).



GAMERS' THRONES

Esports – high-octane gaming to the uninitiated – now thrill hundreds of millions of players and fans around the world, who follow them online and fill sporting arenas to take part in or watch their live competitions. In 2017, more than 200 million unique viewers watched tournaments and leagues held by the world's largest esports company, ESL. DHL provides core logistics services to ESL and will transport stage equipment to the venues throughout the ESL One series, as well as the individual gamer seating that belongs to the teams of players. The DHL brand will also be featured on various social media channels throughout the ESL One series tournaments.



www.dhl-in-motion.com/esports



Photos: Einride; Bloomberg/Getty Images; Helena Kristiansson/ESL; Richard Whitcombe/Adobe Stock; Ferrari; Wang Yudpa; Cover Images/dpa; DHL



The top mile-per-hour speed of Ferrari designer Pininfarina's newest \$2 million electric hypercar

ROUND THE WORLD AND BACK AGAIN

DHL Global Forwarding is set to deploy a second dedicated Boeing 747-700 freighter to connect the U.S., Europe and Asia. Trade routes in Asia, particularly those that ease the transport of goods from China's growing electronics industry, are fueling a growing demand for air freight. Last September saw the introduction of the first round-the-world air cargo service, and now a second aircraft will provide reliable freight space – up to 100 metric tons per flight – on the transpacific route from Shanghai Pudong Airport to Cincinnati in the U.S., then back to Incheon in South Korea. Afterwards it will connect with Wuxi in China, continuing on to Frankfurt-Hahn in Germany. DHL Global Forwarding will also offer twice-weekly departures from Wuxi to Frankfurt-Hahn.



bit.ly/dgf-around-the-world



LAYING FOUNDATIONS FOR THE FUTURE

DHL Freight has broken ground on the site of a new state-of-the-art freight hub in Hanover, Germany. The 63,000-square-meter site in the Airport Business Park in Langenhagen will not only handle freight for DHL's Europe-wide network but will also test innovative technologies and solutions to help create the terminal of the future. The new facility, which will include a transshipment terminal with more than 80 loading bays, will also be built to exacting standards of sustainability. DHL Freight will use innovations such as data from intelligent forklifts and cameras that can measure the volume of parcels to provide a vision of the next-generation freight terminal.



bit.ly/freight-hub-hanover

HEART AND SOLE

The tide of plastic polluting our oceans is a hot topic right now, and one group is taking the rubbish from our seas and turning it into something far more beautiful. Ocean Sole is a Kenyan-based social enterprise that collects flip-flops lost to the waves and creates brightly colored sculptures of giraffes, elephant heads, starfish and whale sharks. The materials used to make flip-flops do not biodegrade, but do break down into the smaller pieces that make up the plastic "soup" doing so much damage to fragile marine ecosystems. Many of the flip-flops that find their way into the seas are coming from Asia, blown across to the African coast by trade winds. Last year alone, Ocean Sole's 72 employees collected 520,000 flip-flops that washed up on Kenyan beaches.



www.oceansole.co.ke



OVER THE HORIZON

Offshore wind energy is booming in Europe, and set to take off in other parts of the world. That's creating significant logistics challenges.

In September 2017, a small but significant chapter in the history of renewable energy came to a close. Working with small boats and a mobile crane, engineers from Danish energy company Ørsted dismantled the last of the 11 turbines that had formed the world's first offshore wind farm.

Sited in shallow water near Lolland in southeast Denmark, the Vindeby site was built in 1991 to test the viability of offshore wind power generation. At the time, there was widespread skepticism that operating turbines in the sea would ever be economically viable. Now, 27 years later, the tide has turned firmly in favor of the once radical approach.

Compared to today's technology, the Vindeby turbines seem almost comically small. Each machine had a nameplate capacity of 450 kilowatts, with rotors 35 meters in diameter. And each one was erected in a single day. By contrast, the MHI Vestas V164-8.8MW turbine, installed earlier this year at Vattenfall's European Offshore Wind Deployment Centre (EOWDC) in Aberdeen Bay, Scotland, is almost 20 times as powerful. At 164 meters in diameter, its rotor is larger than the London Eye. At their highest point, the rotor blades spin 191 meters above the sea. Installing the foundation of the turbine required the use of the 25,000 metric ton

Asian Hercules III, one of the world's largest floating cranes.

The new turbine, the first of a pair under construction at the Aberdeen site, is unlikely to hold the title of "world's most powerful" for very long. MHI Vestas is already building an upgraded 9.5 megawatt version of the design, destined for the Northwester 2 wind farm off the coast of Belgium. Meanwhile, GE's wind energy unit has developed the Haliade-X, a vast 12 megawatt machine with a 220 meter diameter rotor. The U.S. engineering company has signed an agreement with the U.K. to test the new turbine off the coast of Northumberland.

A big industry too

Offshore wind has moved well beyond the technology demonstration phase. By the end of 2017 there were 4,149 grid-connected wind turbines operating in Europe's waters, with a total capacity of almost 16 gigawatts. According to trade body WindEurope, 623 new turbines were erected in 2017, an all-time record. Across the continent, 11 wind farms are currently under construction, all of them in either German or U.K. waters. And the industry signed off on a further six new projects last year, which will add 2.5 gigawatts of additional capacity at an estimated cost of €7.5 billion.

WindEurope expects total installed offshore capacity in Europe to pass the 25 gigawatt mark by 2020.

The geographical distribution of offshore wind energy tells an important story. Today, 84 percent of global installed capacity is in Europe, and just two countries – the U.K. and Germany – account for 60 percent of the world total. In part, that's because physical conditions are favorable. Both countries are wealthy, densely populated and sit alongside the shallow, windy North Sea.

Policy also plays an important role. Until now, offshore wind investors have relied on subsidies, often in the form of long-term power price guarantees, to reduce the significant risks involved in such complex, large-scale projects. However, that situation is changing rapidly. Bigger, more efficient and more reliable turbines, and the industry's growing maturity, have halved the price of offshore-generated power over the past five years. When the U.K. auctioned 15-year subsidized power contracts last year, two offshore wind projects won their bids with a guaranteed price of £57.50 (\$75.40) per megawatt hour, only £5 (\$6.50) more than the expected commercial wholesale price of energy over the contract period.

That price surprised market analysts, who were expecting the developers to demand around 50 percent more. It also makes offshore wind cheaper than new fossil fuel power plants when the cost of carbon emissions permits is taken into account. In Germany and the Netherlands, offshore projects with no direct subsidies were agreed for the first time in 2017.

"The share of global energy demand met by renewable sources is expected to reach 18 percent by 2035," says Steve Harley, President, Energy, DHL. "Offshore wind power is going to be a very important part of that transformation. Offshore turbines enjoy favorable wind conditions, which translates into higher capacity factors. Going offshore makes it easier to find sites for larger arrays and bigger turbines. And the industry has been able to scale up output and bring down costs much faster than originally expected."

The world takes note

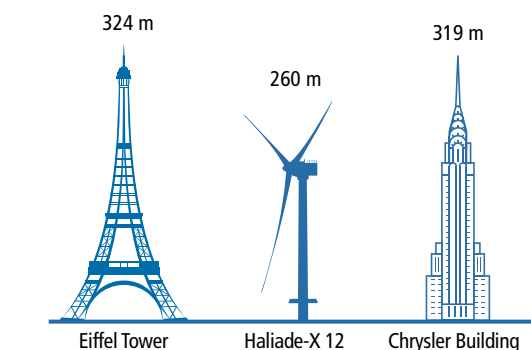
The plunging price of offshore wind energy is encouraging development further afield. China built 18 offshore wind farms in 2017. The country now has almost 2.8 gigawatts of installed capacity, making it the third most important single offshore wind market. Analysts with Bloomberg New Energy Finance (BNEF) predict that China will overtake the U.K. to become the market leader for new installations by 2022. In April, Taiwan announced the winners of an auction for the right to install 3.8 gigawatts of offshore wind capacity, part of a plan to increase offshore generation to 5.5 gigawatts by 2025. The U.S. has only one commercial wind farm in operation today, but a further 28 are in development. Overall, BNEF expects the world offshore wind market



TALL ORDER:
The offshore building boom has created some formidable logistics challenges.



Photos: Luca Locatelli/INSTITUTE (previous page); Vattenfall; Ashley Cooper/Getty Images; Adobe Stock



115 GIGAWATTS

The forecast for global offshore wind energy capacity by 2030

HEAVY LIFTING:

The massive Asian Hercules III crane installs a wind turbine foundation off Aberdeen Bay.

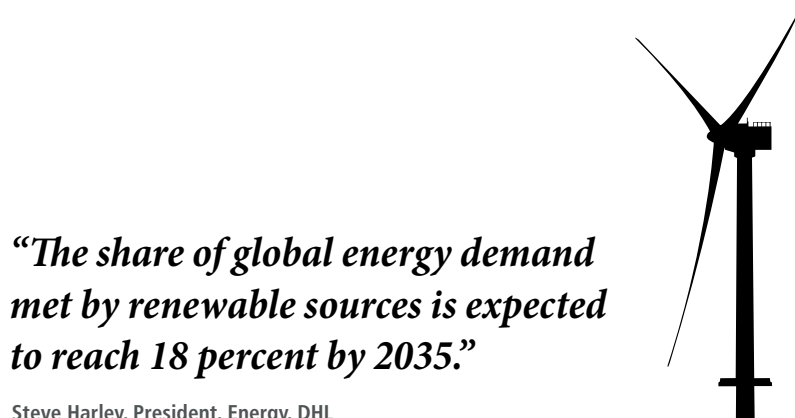
SPECIAL DELIVERY:
Offshore building has required the development of new processes and supply chains.



at the upper end of expectations. Floating turbine technology is important, since it allows the installation of offshore wind farms in water of any depth, enabling the exploitation of wind resources in regions that don't have the benefit of shallow seas. According to Statoil, up to 80 percent of the world's useful offshore wind resources are in waters more than 60 meters deep, where foundations for fixed turbines would be prohibitively costly to build.

16 PERCENT

The annual growth rate of global offshore wind power



“The share of global energy demand met by renewable sources is expected to reach 18 percent by 2035.”

Steve Harley, President, Energy, DHL

How to move mountains

The offshore building boom has created some formidable logistics challenges, however. It has required the development of entirely new processes and supply chains, even in areas like the North Sea with decades of experience in large-scale offshore engineering. “There are significant differences between offshore wind and the oil and gas sector,” says Nicolai Andersen, Global Sector Head Renewable Energy, DHL Industrial Projects. “In oil and gas, logistics involve some very large components along with many smaller items. In wind energy, everything is out of gauge.” Shifting huge turbine components from the factory to the onshore construction base is challenging in itself, he adds. “The nacelle of a large modern wind turbine can weigh 400 metric tons and blades can be 80 meters long. Moving components like that even short distances by road is difficult and costly, so original equipment manufacturers (OEMs), are increasingly moving their factories to port locations, allowing parts to be transported by sea, either on deck carriers or heavy lift vessels.”

Then there are scheduling challenges. The huge cost of the special jack-up vessels used to install turbines

means owners can't afford to have them idle waiting for components to arrive. “At the same time, there often isn't much storage space at the quayside, so you have to deliver just in time,” says Nicolai Andersen.

The industry has worked hard to optimize its logistics capabilities in recent years and its success is one reason why costs have fallen so fast. Manufacturers have developed standard logistics processes, and they've restructured their manufacturing networks to reduce transport distances.

Companies have also built new partnerships with specialist logistics providers. DHL, for example, has established three Regional Wind Competence Centers around the world. Morten Andersen, head of the company's regional competence center in Copenhagen, explains: “Our centers bring people with specialized knowledge of offshore wind logistics together with commercial teams and regional logistics experts. That's vital because logistics projects of this complexity depend on local knowledge as well as industry expertise. You need a proactive presence at the quayside.”

And the complexity is set to rise. Europe's offshore wind industry is keen to grasp new export opportunities as the global market expands. That may require new

UP AND RUNNING:
A technician works inside the rotor head of a wind turbine.



long-distance supply chains. Meanwhile, regions like Taiwan and the U.S. will need to develop their own logistics capabilities very quickly. “In Europe, the industry started with small turbines and applied what it learned as the machines became bigger,” says Harley. “In the rest of the world, they will be installing the very largest turbines from the outset.” ■ Jonathan Ward

3 QUESTIONS FOR

Steve Harley,
President,
Energy, DHL



1. The energy sector has seen plenty of turbulence in recent years. Where does it stand right now?

Among our oil and gas clients, we are seeing a considerably more optimistic outlook. Demand is rising and the recovery in the oil price is driving an increase in upstream activity, with final investment decisions on a number of major projects made in recent months. At the same time, the renewables sector is continuing its strong growth.

2. Does that mean the sector is returning to the same ways of working it used to before the oil price fell?

Absolutely not. The whole industry has achieved significant efficiency improvements and cost reductions, and nobody wants to let those slip away. We are seeing a continued focus on cost and productivity across the sector, whether that means companies are doing fewer big, high-risk projects, or just ensuring that cost-saving approaches are now embedded in the way they work. Moreover, as the integrated players switch investment to upstream projects, there is now even more pressure for efficiency improvements on the downstream side.

3. Is the industry reaching the limits of what it can do to improve efficiency and reduce the cost of production?

Not by a long way. Our clients are just beginning to explore the possibilities of digitalization, for example, using artificial intelligence technologies and smarter data to improve the way they plan, monitor and execute their operations. Ultimately, I expect those technologies to deliver greater reliability, availability and productivity, along with less risk. We'll also see companies finding ways to improve the utilization of their assets – including logistics assets which can be shared or where asset utilization can be outsourced. This change in approach will unlock significant additional cost-saving opportunities.

KEEPING OFFSHORE ASSETS AFLOAT

Operating and maintaining large-scale industrial equipment requires sophisticated supply chains. How do companies manage when that equipment is far out at sea?

192
PEOPLE

The full-time workforce on the Shell Olympus platform

In the Gulf of Mexico, 130 miles south of New Orleans, 192 people live and work in a 40 story, 76 meter by 76 meter structure that floats on four giant steel columns in water more than 900 meters deep. The Shell Olympus production platform, the company's newest and largest in the region, is like a city in miniature.

Crammed into its 32,000 square meters of deck space is a factory capable of processing 100,000 barrels of oil per day, a power station and a heliport. Olympus also incorporates all the sleeping, eating and leisure accommodation necessary to make life safe and comfortable for its personnel, who live on the platform for two weeks at a time.

Keeping Olympus supplied with tools, parts, chemicals, food and other necessities is a significant logistical challenge. And that challenge is repeated at each of the

more than 1,300 other offshore rigs around the world. Logistics accounts for 10 to 15 percent of the operating costs of a typical offshore oil and gas facility. As much as 75 percent of that cost is absorbed by the marine logistics part of the chain: the transport of materials from the nearest onshore supply base to the rig itself.

Costs under pressure

The low oil prices of recent years have encouraged oil companies to put all their operating costs under greater scrutiny. The sector has achieved significant efficiency and productivity gains so far. Bob Dudley, CEO of oil major BP, told at a conference last year that his company has reduced the cost of production in the North Sea by half, from \$30 to \$15 a barrel, for example.

There's still more work to do, however. BP says it wants to cut its North Sea production costs by a further 20 percent over the next two years. Despite the recent rise in the oil price, there is always the risk that low-cost producers in the OPEC group and elsewhere will increase production, putting the recovery into reverse.

Improvements to logistics processes could have an important role to play as the offshore sector looks for its next wave of productivity improvements, says Steve Harley, President, Energy, DHL. He sees considerable scope for the oil and gas industry to adopt strategies that have proved highly effective in other sectors.

The first of those is finding ways overcome the fragmentation that characterizes many of today's offshore

logistics processes. "It's fair to say that marine experts are not supply chain experts, and supply chain experts cannot replace marine experts," he notes. "But the contribution of both can be strengthened with better end-to-end planning and integration."

Companies can pursue opportunities to integrate across their different activities, as well as along supply chains. Frequently, says Harley, the same organization will use different vessel fleets to support construction projects, operations and drilling activities. "By standardizing on a multipurpose vessel, offshore companies can increase vessel utilization and reduce subcontractor numbers, fleet size and marine logistics costs."

Optimal utilization

Then there's the opportunity to optimize the use of marine logistics resources. Offshore supply chains operate under severe space constraints. Supply ships have limited capacity, and platforms little room to store excess inventories. It is essential, says Harley, "to ensure that the equipment and people needed for a job are delivered as near as possible to scheduled start times. The key is to plan and prioritize in advance to optimize deck space, tank space and vessel payload."

Next, says Harley, companies need to continually evolve and adapt their logistics processes as their requirements change over time. "The intensity of logistics support for a facility will vary during its lifespan. A longer-term perspective on capacity planning can save



TIGHT SHIP:
Offshore supply chains operate under severe space constraints.

considerable costs. Oil and gas companies should consider projected rig numbers, drilling schedules, vessel requirements and project lifecycles."

Over the long term, there are also opportunities to make changes on land that reduce costs at sea. "It's important to periodically review the number and location of marine bases, making sure that these are optimized for future variations in offshore operations," says Harley. "This often provides opportunities for cost-saving base consolidation and the use of third-party-owned and operated onshore warehouses and other facilities. Merging supply warehouses can also deliver significant savings by enabling inventory sharing between sites." ■ Jonathan Ward



RIG OUT:
Supplying oil platforms with tools and food is a significant logistical challenge.

Photos: Luke Sharrett/Bloomberg/Getty Images; Yan Lervat/NOI Pictures/plainpicture

SHIP TO SHORE

Not all offshore energy assets stay in one place. Tankers, drill ships and survey vessels spend most of their working lives in motion, on itineraries that can take them around the world. And the highly specialized cranes and heavy lift vessels used in the construction and decommissioning of offshore assets may be called into service almost anywhere.

When these vessels do come into port, they want to spend as little time there as possible. "A vessel in port is very much like an aircraft on the ground," says Florian Hürttle, Head of LLP (Lead Logistics Partner) Germany, DHL Global Forwarding. "You have a very expensive asset that isn't earning money for its owner. Resupplying a vessel involves time-critical logistics with a very high cost of failure."

It was those parallels that inspired the establishment of the specialist marine logistics unit, which is co-located with DHL's equivalent aerospace facility. "We realized that there was an opportunity to take many of the approaches developed in aerospace and apply them in the marine sector," says Hürttle. Today, the Hamburg facility provides a comprehensive range of logistics services for customers that include shipping lines, fleet operators and marine equipment suppliers.

Those services include the management of routine logistics activities, such as the delivery of equipment and provisions to port-side warehouses. But they can also involve short-notice, rapid response activities to transport critical parts when a vessel has an unexpected breakdown at sea. "With our systems and processes, we can help our marine customers achieve much greater visibility in their logistics activities," says Hürttle. "That helps to ensure quality and keep costs under control."

50
PERCENT

The reduction in production costs achieved by BP in the North Sea



BIG ENERGY MEETS BIG DATA

The energy sector is finding new ways to tap into its data reserves.

The energy industry is a data-rich environment. Across the sector, companies collect a wide variety of data in huge volumes, often at high velocity. Geologists gather seismic data to pinpoint potential new sources of gas and oil. Renewable companies continually watch the sun and the wind to both identify changing patterns and optimally locate energy generation sites. National Oil Companies (NOCs) are using drones in remote locations to gather visual information on, for example, pipeline leaks. And refineries and processing plants increasingly depend on big data to predict production failure and activate remedial maintenance, thereby reducing downtime.

The industry as we know it today simply wouldn't exist without its data. But despite its importance, most energy companies do something strange with the vast majority of the data they generate: They throw it away. There are practical reasons for that. In aggregate, the equipment installed on an offshore oil platform generates between one and two terabytes of data every day. Right now, those facilities just don't have the data bandwidth to export most of that data for analysis. As a result, they monitor the data stream for things they know are important, like indications that there is a safe-

SCREENING PROCESS:

Energy technicians are using AI-based systems to evaluate big data.

ty or production issue. If there's nothing there to raise concern, the remaining data may be stored locally for a while, but it is ultimately deleted.

Drilling for insights

Today, however, there's a data revolution underway. Across industries, the emergence of new artificial intelligence (AI) technologies are allowing organizations to use their data in much more powerful ways. Unlike the software systems of the past, the latest analytical approaches don't get bogged down by huge data sets, they thrive on them. Today's AI-based systems can take in big data, evaluate and categorize it, and then draw inferences from this to provide an insight, decision or conclusion.

For data owners, this kind of analysis has huge potential. Instead of just combing their data for things they already know about, they can now mine it for entirely new insights, revealing opportunities for improvement they had no idea existed. Moreover, the more data these AI systems consume, the smarter they get. AI-based systems can learn continually from the real world, adjusting their models in response to the latest information and forming new insights.

Energy companies have been quick to spot the potential of this new approach. For example, oil major Total recently signed an agreement with Google Cloud to jointly develop artificial intelligence solutions applied to subsurface data analysis for oil and gas exploration and production. Offshore, companies are exploring the use of hybrid approaches, in which the torrent of operational data is scanned by local AI systems and a smaller subset of that data is exported for central storage and analysis.

AI en route

The growth of AI also has profound implications for logistics in the energy industry, says Steve Harley, President Energy, DHL. "Logistics networks are now shifting to a proactive and predictive paradigm. Computer vision and language-focused AI systems are helping logistics personnel to see, understand and interact with the world in new and more efficient ways. AI technologies are also enabling a new class of intelligent logistics assets to augment human capabilities – for example, automation can be added to essential Health, Safety, Security and Environment (HSSE) compliance checks, ensuring any irregularity or misalignment is instantly identified and escalated for urgent attention. One of our customers is considering applying AI to the logistics operations of an offshore rig in the North Sea," he adds, in order to improve the efficiency of supply vessel, helicopter and personnel movements, while also raising safety standards. ■ Jonathan Ward

DEEP HEAT

The Iceland Deep Drilling Project is plumbing new depths in search of sustainable energy. If successful, the impact could be of global significance.

In Jules Verne's 1864 classic "Journey to the Center of the Earth," Professor Lidenbrock and his nephew Axel begin their descent from the slopes of Snæfellsjökull, a volcano on the western tip of Iceland.

Today, scientists and engineers are once again exploring the earth deep beneath Iceland's surface. But now their goal is not to find remnants of humankind's lost ancestry but future sources of clean energy.

Iceland is in a unique geological position, sitting astride a rift between two tectonic plates. The region is a hotspot of geological activity, with numerous active volcanoes, geysers and hot springs.

Rising energy demands

As well as boosting Iceland's tourist industry, this also fulfills many of the island's energy requirements. Two-thirds of primary energy come from geothermal sources, which provide heat for 90 percent of Iceland's homes.

However, the country wants to do more with its geothermal resources, particularly geothermal electricity generation. And their efforts could have an impact far beyond the small island on the edge of Europe.

Today, seven geothermal power stations produce around 30 percent of Iceland's electricity. But demand, especially from the energy-intensive aluminum sector, is rising rapidly.

Large-scale geothermal power production is tricky. The steam and hot water extracted from conventional boreholes to heat buildings are far cooler than steam used in conventional thermal power stations. As a result, the output of geothermal power plants tends to be lower than that of conventional ones.

Iceland's largest geothermal plant, Hellisheiði, produces 303 megawatts of electricity using steam from 50 wells, each up to 2,200 meters deep.

The search for "supercritical" fluid

In search of greater output, scientists, geologists and engineers are drilling much deeper into the earth. They hope to access water at much higher temperatures and pressures – between 450 and 600 degrees Celsius and 23 to 26 megapascals.

In such extreme conditions, the nature of water changes radically. It becomes a "supercritical" fluid, neither liquid nor gas but with characteristics of both. Supercritical fluids are already widely used in industry and conventional power generation, where they can boost output and thermal efficiency.

There's a catch, however. To access supercritical water, it is necessary to drill down five kilometers, more than twice the depth of today's geothermal wells. In 2005, the Iceland Deep Drilling Project set out to do just that. Its first attempt, IDDP-1, had to be aborted in 2009 when the drill unexpectedly reached liquid magma at a depth of just over two kilometers. In 2016, operations shifted to a second site, IDDP-2, at an existing 2,500 meter well on the Reykjanes Peninsula.

Reasons for optimism

In January last year, after 176 days, the IDDP team achieved its objective, reaching a depth of 4,569 meters. Despite challenges along the way, like stuck drills and problems sealing the walls of the well with cement, there are reasons for optimism. Measurements taken indicate favorable conditions for supercritical fluid: a temperature of 426 degrees Celsius, a pressure of 34 megapascals and areas of permeable rock through which it could flow.



HOT SPOT: Iceland is famous for its active volcanoes and geysers.

The next challenge is power production. Work is already underway to build a flow line and pilot plant. The team is proceeding cautiously – it doesn't yet know the chemical composition of the fluids that will come up – and flow testing is scheduled to begin in mid-2019.

If all goes to plan, the IDDP won't just take Iceland one step closer to supercharging its geothermal power production. The work could also have important implications for sustainable power production elsewhere in the world. Geologists believe that supercritical geothermal fluids might be found wherever there are relatively "young" volcanoes. That could include South Pacific islands, parts of Latin America and even the western U.S.

That means that it's not only Icelanders who could benefit from their ambitious project to harness the geothermal power deep beneath the earth. It could also add another weapon to the world's arsenal for fighting climate change. ■ Jonathan Ward

90
PERCENT

The share of Icelandic homes heated by geothermal energy

Photos: Gilles Leimdorfer/TOTAL; Photomotion/ddp images

HOW TO CLICK IN B2B

B2B e-commerce sales have grown significantly in recent years, but still lag behind the B2C market. And yet, if they can get it right, B2B players could take a massive leap forward in the e-commerce space.

In retail, e-commerce has in many ways simply become commerce: such is the demand for online shopping that today's retail giants are usually either brands that have grown to meaningfully engage with the web, or else born-on-the-internet outfits. Yet there's more to e-commerce than the consumer side.

Today, B2B e-commerce is a growing area, with Forrester Research predicting it will reach \$1.2 trillion and account for 13.1 percent of all B2B sales in the U.S. alone by 2021. Cross-border B2B transactions are estimated to reach \$1.2 trillion in the next five years, with Forrester estimating the total value of the online B2B sector at \$9 trillion.

Capturing as large a share as possible of that remaining 86.9 percent currently not conducted online is the obvious challenge for the B2B sector, and businesses that have started to do so have developed innovative online platforms that address the specificities of B2B purchasing.



Ferguson Enterprises, for example, the largest distributor of plumbing supplies in the U.S., has done much to increase its e-commerce presence. Selling to a variety of customers in the industrial, construction and building supplies sectors, it grew B2B e-commerce sales to \$3 billion in 2017.

A key part of this was developing an e-commerce experience that was responsive to buyer needs, including features such as on-site search, website usage tutorials, video libraries, detailed product catalogs, real-time stock availability tracking and a customer e-portal for personalized content. Unlike a typical B2C site, however, Ferguson also developed special features aimed directly at the B2B buyer such as reorder processing, multiple shipping options, commercial credit, quotation services, tax and customs calculation, and an effective returns and cancellation policy. This is all backed up by an interactive customer support team via a wide range of channels.

"Everything we do in the e-commerce space is centered around our customers," says Mike Brooks, Ferguson's CMO. "In our industry, the shortage of skilled trade professionals combined with changing customer expectations is driving the need to continually build on and improve our B2B online experience."

Forward-looking e-commerce solutions like those of Ferguson are not yet the norm, however. In terms of adoption, B2B lags dramatically behind B2C.

Winning strategies

"I don't think making the switch to e-commerce is an easy thing for B2B businesses to do," says John Pearson, CEO Europe, DHL Express. There are risks, he points out, and potential pitfalls: "Businesses need to develop a clear understanding as they go into this market and ensure that the e-commerce offering they



choose to develop is right for them and their customers. They need to go in with their eyes open, rather than just saying 'Competitor A is doing it, so we should too.'"

Pearson, however, also sees many opportunities: "A growing number of our B2B customers are currently either increasing their online presence or are in the process of developing strategies for an omnichannel approach. There are tremendous advantages for those companies that manage to get it right, and the right strategy can open up tremendous opportunities around the world."

At the center of any e-commerce strategy must be a clear understanding of the customer journey; not so different from traditional B2B commerce then – but something that is lacking in many B2B e-commerce solutions, which typically remain unresponsive and more complex than traditional sales channels.

Specialist B2B market research firm B2B International has found that only 14 percent of large B2B companies can be described as truly customer centric in their e-commerce offering, while KPMG's report "B2B Customer Experience: Winning in the Moments that Matter" found that B2B e-commerce lagged behind in terms of personalization and required too much time and effort from buyers.

Overcoming resistance to change

Laurent Muzellec, associate professor in marketing at Trinity College, Dublin, and director of the Trinity Centre for Digital Business, believes that B2B e-commerce has failed to keep pace with B2C for reasons related to both ends of the transaction.

Sellers, he explains, are still often reluctant to cannibalize offline sales to boost e-commerce, while entrenched habits often still dominate industrial and commercial buying.

However, Muzellec believes that this resistance can be overcome by making the process smoother – and more ubiquitous – than the traditional channels. Increasing investment in web-based



supply management solutions is the way forward, he says.

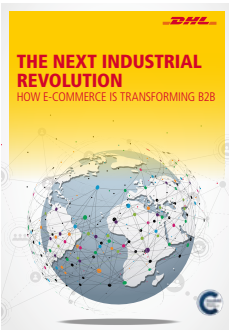
Pearson agrees, saying that buyer-side willingness must be fostered by B2B businesses meeting customer needs and creating a user experience akin to that of online retail platforms. "We all purchase online. The mindset has evolved and, therefore, we're taking that back to the workplace," he says. "The B2B seller needs to think about a lot of things. User experience

is one of the key things: if it's poor it adds zero value."

Logistics also plays a critical role, especially in cross-border e-commerce. According to Pearson, speed, convenient and reliable delivery and traceability are some of the essentials. To succeed, he says, B2B e-commerce must offer what is already the norm in online retail – a logistics strategy that provides multiple transport and delivery options, giving the buyer choice and convenience.

"Furthermore, developing the B2B e-commerce space needs to be understood as an ongoing process rather than a one-off shift," Pearson comments.

"You have to constantly innovate and invest, whether it's keeping your site up to date or being active in digital marketing; you have to keep yourself in the frame as the market is evolving all of the time." ■ Jason Walsh



"The Next Industrial Revolution," a white paper jointly developed by DHL Express and the Cranfield School of Management, investigates the current trends and significant potential of the global e-commerce landscape for B2B companies and gives a series of practical recommendations. Download the paper at:

bit.ly/dhl-e-commerce-b2b-paper

Photos: Adobe Stock (4); Getty Images; DHL

THE RISE OF THE URBAN CONSUMER

The world's urban population is growing by 65 million annually, with increasing numbers living in ultrahigh-density conurbations: It's no less than the rise of the megacity and with it, urban consumers, busy, cash-rich and time-poor. How can e-commerce businesses win them over?

It's another packed day for Cataline Lloyd. As she arrives at Los Angeles International Airport from a business trip, she has myriad things to do before an evening engagement, so en route home her shopping is done online.

The busy director of sales and marketing, whose job frequently takes her across cities in the U.S. and beyond, has little time to browse the shops in L.A.'s sprawling metropolitan area. "My time at home is so limited that I prefer to shop online rather than fight L.A. traffic and deal with parking," she comments. "However, sometimes delivery options can be restrictive and I can't always be available during certain hours so it's important to me that companies provide flexibility and actually deliver when they say they are going to."

Lloyd is one of a growing breed of urban consumers living in one of the world's ever-expanding megacities – in L.A.'s case, an expansive area that is home to some 15 million residents. These cities are important economic drivers. In its report "Urban world: Cities and the rise of the consuming class," the McKinsey Global Institute projects that by 2025 the "City600," the



world's fastest-growing megacities and middle weights, will be producing a GDP of \$30 trillion, driving nearly 65 percent of global growth.

As megacities grow and prosper so does consumer demand. Like Lloyd, urban consumers typically lead busy, fast-paced lifestyles and have the cash to spend, and want simple, convenient solutions to match. For e-commerce businesses, this means applying smart logistics strategies to keep pace.

Peter Schulz-Rittich, Vice President Product Management Domestic Delivery, DHL eCommerce, says that expectations have grown significantly with the rise of the urban consumer. "We are talking about a great many urban professionals with little time. These are predominantly tech-savvy consumers, and most of them are mobile natives," he comments, adding that same-day and on-demand delivery, ever shorter time windows, dynamic rerouting, delivery visibility and multiple delivery options are becoming more than a nice-to-have for e-commerce businesses who want to win over those discerning groups of consumers.



Managing complexity

Expanding services in both established and emerging markets presents challenges, but the inexorable growth of

the megacity demands it. MIT's Megacity Logistics Lab notes that parallel to the rapid increase in the number of megacities with more than ten million inhabitants, e-commerce has triggered an increasing amount of direct shipments, with direct deliveries both increasing the complexity of last-mile urban transportation networks and leading to the fragmentation of shipments, higher complexity and a greater need for coordination to ensure goods are distributed efficiently.

In order to address both this complexity and rising expectations, new products and services are being developed. Schulz-Rittich points to DHL Parcel Metro as a solution that DHL eCommerce has developed to help e-tailers tackle the urban last mile. A fast and flexible service for online retailers, it meets the demand for instant, same-day and next-day delivery, utilizing a state-of-the-art technology platform that allows



DHL eCommerce to create a virtual delivery network of local and regional delivery vendors and crowd-sourced providers. This ensures maximum flexibility and capacity over the last mile and enables a high-quality and affordable delivery service.

"Retailers can offer a seamless end-to-end e-commerce experience to their customers by customizing the mobile delivery interface with their logo, colors and fonts," says Schulz-Rittich, "while for consumers, the service allows them to track shipments in real time, communicate special instructions to their courier, reschedule a delivery and rate their delivery experience."

Opportunities in emerging markets

Deployed in Atlanta, Chicago, Dallas, L.A. and New York in the U.S, as well as in Bangkok, Ho Chi Minh

City and Hanoi in Southeast Asia, Parcel Metro is able to combine the virtual network with available delivery assets and thus quickly expand to more megacities.

Naturally, there are also local and regional specificities, not just in terms of infrastructure but even down to how e-commerce is conducted. In China and other

Asian countries, for example, pervasive social networks – notably not the same ones used in the West – have seen consumers move to a "social commerce" model, where shopping is assisted by user ratings, referrals, social advertising and even sales occurring within the social networks themselves.

"In Asia, social commerce is already big and growing strongly," says Charles Brewer, CEO DHL eCommerce. "Depending on the country, it accounts for about 30 percent of all e-commerce, but today you won't find a good user experience when it comes to fulfillment of such social commerce deliveries."

It is also a different and emerging method of shopping – one that differs from traditional e-commerce in that it is even more reliant on relationships of trust built up between the retailer and consumer. Part of that trust depends on delivery. According to Accenture's "Continuous Delivery" survey, 86 percent of consumers regard delivery as part of their total online shopping experience. Brewer comments: "Today's e-tailers are increasingly realizing that the customer experience – and their ability to build customer loyalty – is won and lost by how well the orders are fulfilled and delivered."

Differences in emerging market cities present an opportunity for growth, however, and with these cities increasingly becoming economic hotspots, that's an opportunity e-commerce businesses can't afford to miss.

"In emerging markets," says Brewer, "alternative delivery options such as delivery to service point, locker, neighbor or other secure and convenient locations are still very nascent, presenting an opportunity for e-commerce businesses to get ahead of the curve and differentiate, if they ensure their delivery strategies are up to speed." ■ Michelle Bach



RAPID TRANSIT:
Addis Ababa is home
to one of the first metros
in sub-Saharan Africa.



ETHIOPIA: ON THE RIGHT TRACK?

It has emerged as one of Africa's great development success stories, and in doing so opened up its giant population and domestic market to foreign companies. But can Ethiopia continue its run of success after more than two years of political unrest have rocked the boat?

The world was shaken by images of Ethiopian famine back in 1984, yet since then the country has achieved a remarkable turnaround to become one of Africa's economic success stories in the volatile Horn of Africa.

Since 2005, it has achieved double-digit annual GDP growth according to some estimates, while the 8 percent preferred by the International Monetary Fund (IMF) and some Western analysts is still more than respectable.

The speed of change is illustrated by the exponential rise in Ethiopia's GDP. In 2000 it was \$8.2 billion, growing to just over \$43 billion by 2012 before nearly doubling to \$80 billion by 2017, according to the IMF. By 2023, it is forecast to reach \$129 billion.

Foreign investment piled in as Ethiopia emerged as one of the world's fastest growing economies, while

social and economic indices improved faster than anywhere else in Africa (albeit from a low base). But despite all this, at the end of 2015 protests broke out within the country's Oromia region, home to Ethiopia's largest ethnic group, the Oromo.

As protests continued into 2016 and beyond – in February this year the country declared a second state of emergency coupled with the prime minister resigning – the country saw its hard-won reputation as an East African stalwart of stability and business opportunity badly shaken.

Ethiopia has always been a country of contradictions, its current rapid pace of change heightening the divergence: In parts of the country people live almost mediocrally, while parts of the capital, Addis Ababa, are as expensive as New York, with the affluent part of the urban population able to afford luxury Western goods

and comfortable lifestyles. One of Ethiopia's great challenges is squaring such extremes.

Nevertheless, there remains among those doing business in Ethiopia a sense of cautious confidence about the country's future and opportunities – one reason foreign direct investment (FDI) remained robust during the troubles: In 2016, flows to Ethiopia rose by 46 percent to \$3.2 billion. Optimism has been further raised by the fact that the state of emergency was lifted in June at the same time that the country announced the end of a long-standing feud with Eritrea over land and a move to open up state-owned monopolies to investors.

"Ethiopia has a great need for foreign direct investment, the government wants it to come from a wide range of countries, so there are opportunities for everyone," says Clive Newell, a 35-year veteran of the U.K.'s Foreign Office, and now an Africa and Middle East expert at G3, a London business intelligence and investigations firm.

The main advantages, Newell notes, are a growing and youthful large population, strong and sustained economic growth forecast to continue, accelerating urban development, an emerging middle class, a well-established and expanding agricultural sector, and untapped mineral wealth.

Steadying the rudder

On April 2, Abiy Ahmed was sworn in as Ethiopia's new prime minister. The 42-year-old technocrat – crucially an Oromo – is widely seen as a reformer who is already taking steps to restore calm.

While the periodic unrest and the state of emergency had somewhat affected business confidence, the new prime minister has helped to stabilize the situation, Newell says, adding: "It's business as usual in most of the country."

Indeed, even at the height of the protests, life went on as normal in the capital, Addis Ababa. Ethiopia's time zone (GMT+3) is conducive for international business, and its strategic position between the Middle East, Europe and the U.S. means it "can be called the center of the globe," says Wudu Yedemie, Country Manager, DHL Express Ethiopia, who notes how within a 10-hour-flight circumference of Addis Ababa, one can reach 6 billion of the world's population.

The continuing stability of Ethiopia's macroeconomic and investment policies during the unrest meant the country still managed to be named a "Star Performer" in an FDI Attractiveness survey by the World Bank in its 2017/2018 Global Investment Competitiveness Report.

Embracing the developmental state model

Conscious of the need to boost production and productivity to sustain the country's giant population, the government has embraced state-led development policies focusing on services and agriculture, and drawing on state-generated revenue from strongly performing

public companies like Ethiopian Airlines and Ethio Telecom to finance large infrastructure projects.

Ethiopia wants to become a light manufacturing hub to rival those found in the Far East, hence its ambitious program of building multiple investor-friendly industrial parks offering special opportunities to attract foreign capital and expertise.

The country's current population of around 100 million – making it Africa's second most populous country after Nigeria – is set to exceed 127 million by 2037. As a result it has a huge labor force that is young, relatively well-educated and affordable. Labor costs are less than half the level in China and Vietnam, according to the McKinsey Global Institute.

"There is huge promotion on the focused sectors like garment manufacturing, horticulture or other manufacturing in the industrial zones, which are well incentivized to promote these activities [with the likes of] 10-year exemptions from tax and VAT," says Amadou Diallo, CEO, DHL Global Forwarding Middle East and Africa.

For example, Ethiopia aims to boost foreign exchange earnings from flowers and other plants to more than \$1 billion a year from \$280 million now, according to the Ethiopian Horticulture Producer Exporters Association.

Other growth areas include sugar industry development, the brewery industry, the hospitality industry, the cement industry and construction.

While the country's state-led development model has drawn comparisons with China's, key differences exist. China has allowed private enterprise to prosper, while the Ethiopian government had until recently restricted access to several key sectors such as telecoms, banking and retail.

However, on June 5 the government announced it was loosening its grip on a number of sectors, including telecoms, airlines and energy. While it will retain majority stakes in what were previously state-run monopolies like Ethiopian Airlines and Ethio Telecom, they will now be open to private domestic and foreign investment – a major policy shift.

\$5.1 BILLION

The amount the World Bank says Ethiopia must invest in infrastructure annually for the next 10 years

ON THE MOVE:

The Ethiopian government is investing heavily in road infrastructure.



Photos: Jakob Polacek/Getty Images; Vincent Fournier/Jeune Afrique-REA/aiif

39 PERCENT

Ethiopia's infrastructure spending as a percentage of GDP

Land of origins and bounty

The country has the second highest number of river resources in Africa and has begun tapping its enormous hydropower potential, aware that a reliable and ample source of energy is required to drive industry forward, while its absence will hinder progress. The latest 6.5 gigawatt Grand Ethiopian Renaissance Dam (GERD) could prove a game changer for local energy consumption and enable excess electricity to be sold to neighboring countries. The dam would also provide water for vast new irrigation schemes to spur the country's already well-established and expanding agricultural sector. The dam's manmade lake could even generate fishery and tourist attractions, such as boating and pleasure cruises.

Wind, geothermal, solar power and biomass also offer renewable energy opportunities. Large-scale natural gas production infrastructure is under construction and should generate \$1 billion per year in revenue, with exports due to start in September 2018. And at the beginning of July 2018, 450 barrels of petroleum crude were extracted from three wells, proving the nation has a commercially viable reserve.

Meanwhile, the government has deftly managed good trade relations, utilizing the U.S.'s African Growth and Opportunity Act (AGOA) that enhances market access to the U.S. for qualifying sub-Saharan African (SSA) countries.

Its exports also have duty-free and quota-free access to the EU, Japan, Canada, China, Turkey, Australia and New Zealand, while India grants it preferential access.

Full steam ahead

"Ethiopia is the region's locomotive," says Dawit Gebre-ab, director of strategic planning at the Djibouti Ports and Free Zones Authority, which manages

Djibouti's network of ports and logistics infrastructure. "With its expansion in manufacturing, Ethiopia could become the China of Africa. It possesses all the ingredients." The huge population also means public and private healthcare spending is increasing rapidly.

"The government has set itself ambitious targets to improve the health of the population," Newell says. "Both public and private healthcare need new clinics, hospitals, equipment, ambulances, coldchain facilities and much else besides, [also] better availability of imported and locally produced pharmaceuticals."

Economic liberalization in telecoms looks likely to give the sector a huge boost and give the government more revenues. It's estimated, for example, that the current \$900 million the government reaps from its Ethio Telecom monopoly could be closer to \$10 billion if more competition were allowed.

"Since these sectors have been closed for so long, every sector will offer an opportunity for the [business] experts to play a role in Ethiopia soon as they open up for international business," Diallo says.

When it comes to technology, many Ethiopians are currently too poor to snap up tech goods. But that hasn't stopped the country developing mobile phones and smartphones for export to other parts of Africa, such as Nigeria. Furthermore, the country's rapidly expanding middle class means a growing portion of the population has disposable income for higher-tech, more expensive goods, and Ethiopia is poised to become a middle income country by 2025, according to the World Bank.

In 2016 Ethiopia overtook Kenya as the largest economy in East Africa, and remains the U.S.'s main Horn of Africa ally, having played a key role in regional military operations. Such economic, political and military clout means Ethiopia is well placed to drive economic development for the increasingly integrated East Africa region, which currently has 71 construction projects valued at \$32.6 billion, according to Deloitte, and four of the 10 biggest projects are in Ethiopia.

"Ethiopia's projection of soft power, including trade relations with its neighbors, the development of cross-border economic infrastructure and sharing of services, is helping to bind these nations more closely together and demonstrating in tangible ways the benefits of integration," says Matt Bryden, executive chairman of Sahan Research, a Nairobi-based think tank.

Keen to connect

The country is also seeking to overcome both its landlocked state and its isolationist past with a series of five-year Growth and Transformation Plans to improve infrastructure and facilitate international trade.

GROWING ECONOMY:

Ethiopia has an expanding agricultural sector.

Infrastructure spending as a percentage of its GDP – 39 percent in 2017, according to an analysis by financial consulting group Deloitte – is the highest in Africa, with transport, energy and real estate the top three sectors driving the expenditure spree.

"The government is heavily investing in infrastructures for road, aviation and rail and factoring in convenience through building industrial parks with one-stop shop services, such as customs, and more," says Yedemie. "It's also building dry ports to reduce the effect of being a land-locked country, and investing in IT parks to enhance supporting technology infrastructure."

He notes Ethiopian Airlines is a particular logistical strength, with strong local, regional and international passenger and cargo flight networks. The government is upgrading the national road network, he says. This will enable farmers to transport produce to bigger markets, support the area's growing sugar industry, enable the development of coal mines in the region, and improve connections to neighboring countries such as Sudan, Kenya and Djibouti.

In 2018 a new \$4 billion electric railway from Addis Ababa to Djibouti opened, cutting freight transport times from two days to ten hours.

But while Ethiopia's transport infrastructure is undoubtedly improving, like most elements in Ethiopia it is coming from a low base. "The infrastructure at all critical points in our logistics world is not up to the mark and a lot needs to be done to bring it up to speed," Diallo says.

"Furthermore, the procedural component also lags behind other African countries, including below-par customs processes and formalities, international shipment handling, timeliness at customs and ports, logistics competence, and tracking and tracing of all shipments entering and moving around the country," he adds.

This explains why, in 2016, the World Bank's Logistics Performance Index assessment ranked Ethiopia at 126, placing it well behind South Africa and Kenya, and also behind the likes of Tanzania, Rwanda and Ghana. But a low starting point invariably offers potential.

"The challenges are there," says Diallo. "We do however see significant opportunities in Ethiopia going forward, provided the country manages to address its challenges in terms of trade facilitation and processes."

There are other economic issues to overcome. The country is struggling under high public debt and rising inflation, and has long been plagued by a shortage of foreign currency – a consistent lament from foreign companies working in the country – while Ethiopia's ease-of-doing-business ratings remain among the world's worst.

The World Bank estimates the country needs to invest \$5.1 billion in infrastructure each year for 10 years to overcome existing constraints on development. Ethiopia is also heavily in debt to – and dependent on – China for providing enormous funding, expertise and cooperation for many of Ethiopia's recent infrastructural developments.



READY FOR TAKEOFF:

Ethiopian Airlines operates passenger and cargo flight networks.

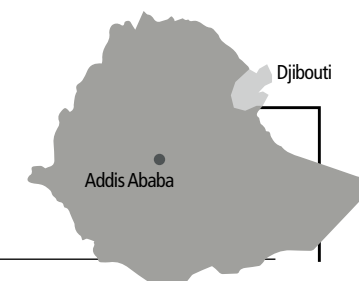
Crucial juncture for future growth

Ethiopia therefore finds itself at a crossroads. Despite the current optimism and relative calm, further violence is possible and, if sustained, could result in shareholder pressure to mark time on investments, or even disinvestment campaigns by human rights activists. But if the ruling party continues to open up the economic and political system, some say Ethiopia's progress toward stability and prosperity could quicken.

For now, the consensus among observers is that investors will continue to be drawn by the country's advantages: the size of the domestic market, the sustained record of high economic growth, the government's welcoming of foreign investment and striving to provide the requisite infrastructure, an increasingly skilled workforce and Ethiopia's growing regional role.

There is even talk of Ethiopia eventually emerging as an African powerhouse alongside South Africa and Nigeria – if it can retain stability both politically and economically.

"It's a promising situation as the country opens to the world, and now is the right time to be there," Diallo says. ■ James Jeffrey



ETHIOPIA

Population:
105,350,020 (July 2017 est.)

GDP: \$79.74 billion (2017 est.)

World Economic Forum's Global Competitiveness Index 2017–2018: 108th out of 137

World Bank Group's Ease of Doing Business Index: 161th out of 180

DHL Global Connectedness Index 2016: 106th out of 140

\$129
BILLION

The IMF forecast for Ethiopia's GDP by 2023



Photos: Jan Garup/lalit; Michael Gottschalk/Photothek/Getty Images; Adobe Stock

A FRESH WAY OF THINKING

We all want less food waste. But consumers also demand a wide choice of produce all year round. Can logistics help businesses solve this dilemma?

The Washington Post called it one of the most adored and ridiculed food trends in recent memory. Avocado toast, the much beloved – and “Instagrammed” – brunch food of choice of urban millennials around the world. While you have to admire the social media-savvy eateries that have turned the avocado into a generation-defining dish, the real creativity is happening far from the brunch table. For years avocados and other capriciously ripening fruit have presented challenges throughout the supply chain. Now, however, a cascade of technological innovations is poised to cut food waste from farm to fork, saving companies millions of dollars – and with smart supply chain management playing central role.

According to the United Nations, around one-third of all our food worldwide gets lost or wasted. Year-round demand for variety means produce routinely spends up to six weeks in transit, and is discarded at every stage of the journey. In developed countries, only around 70 percent of food actually reaches the table, due to retail regulations and consumer preferences for the perfect look and shape of produce.

The FUSIONS research, a four-year European Commission project, suggests that some 88 million metric

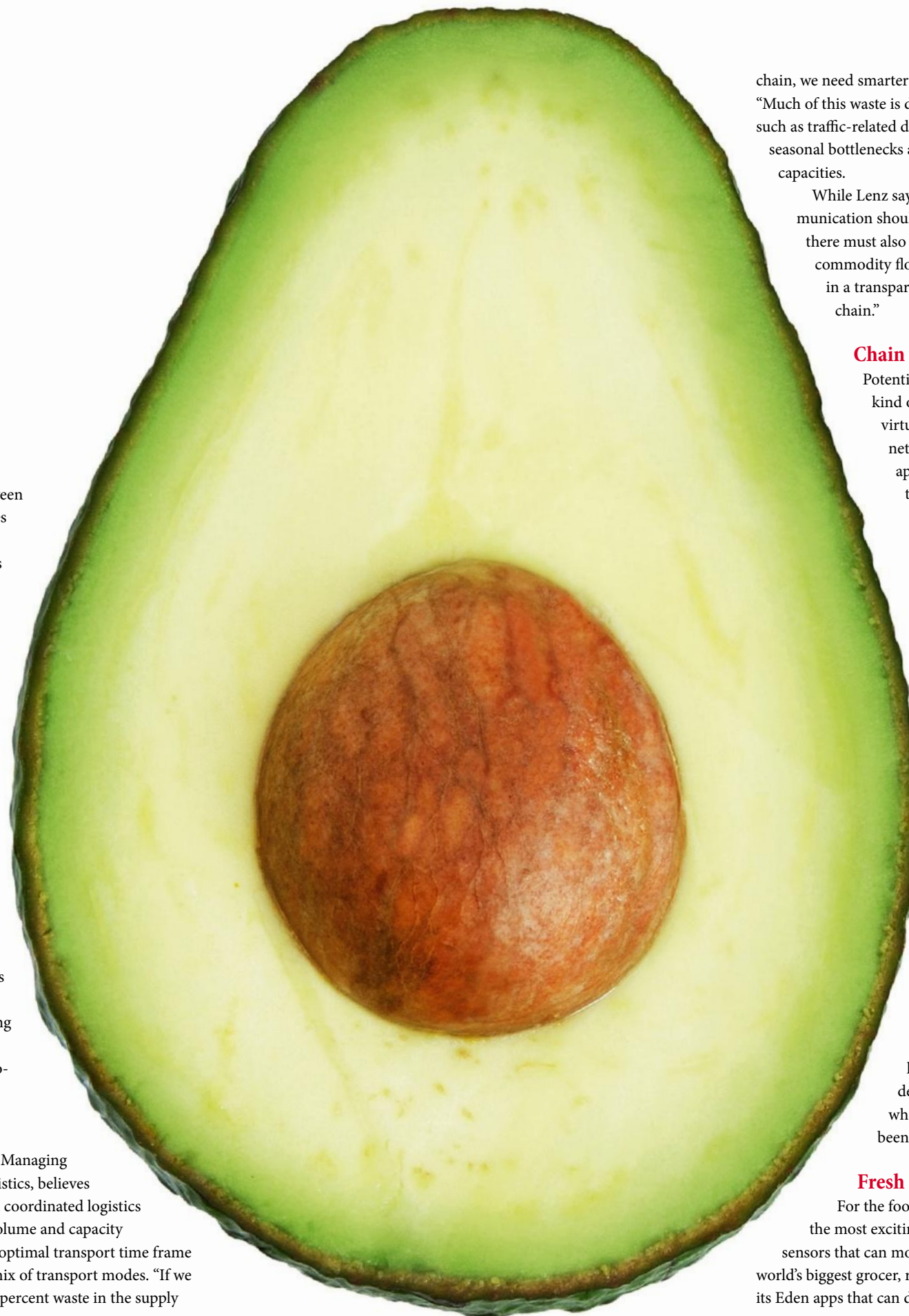
€143
BILLION

The annual cost of food waste in the EU

tons of food get lost between European fields and plates annually – with some 14 percent of the overall loss worldwide actually occurring in logistics. This chimes with a recent report on food waste by Dutch bank Rabobank that suggests the supply chain needs to innovate, with optimization of every supply chain process required to guarantee success. According to Paul Bosch, an analyst with the bank's Food & Agri Research team: “Looking at the food chain from farm to fork, most wastage occurs within and between food and agri companies during production, post-harvest handling and storage, processing and distribution.”

Smarter not faster

Andreas Lenz, Executive Managing Director, DHL Food Logistics, believes that the only solution is a coordinated logistics strategy that allows for volume and capacity planning – as well as the optimal transport time frame and most cost-effective mix of transport modes. “If we want to influence this 14 percent waste in the supply



chain, we need smarter capacity management,” he says. “Much of this waste is due to unnecessary holdups, such as traffic-related delays, missing information flows, seasonal bottlenecks and bad management of freight capacities.

While Lenz says that information and communication should play a central role, he asserts there must also be a willingness to treat data on commodity flows “not as a business secret, but in a transparent way to benefit the supply chain.”

Chain reaction

Potentially, the biggest catalyst for this kind of change is blockchain, the virtual public ledger comprising a network of computers that must all approve an exchange before anything can be verified. In terms of a food supply chain this could create an unprecedented level of transparency from “farm to fork,” including data such as temperature, production date and ingredients. Chinese e-commerce giant Alibaba has just launched its own blockchain-encrypted platform to track food delivery, called Food Trust Framework.

But it is not just tracking technologies that will make the difference, there is also “smart” tracking. By the end of 2018, for example, a total of 2,000 smart SBB Cargo freight cars will be traveling on Europe's railways equipped with Bosch Engineering sensors, software, and services. The cars themselves know when they arrive at their destination and can determine whether or not the cold chain has been maintained.

Fresh off the truck

For the food industry, however, perhaps the most exciting technical breakthroughs are sensors that can monitor freshness. Walmart, the world's biggest grocer, recently made headlines with its Eden apps that can determine a product's freshness

150,000
METRIC TONS

The amount of food Americans waste each day – equal to one pound per person

from farm to shelf. Soon-to-ripen bananas headed for a store 500 kilometers away, say, can be diverted to a closer one, thus eliminating potential waste. Eden will help the company reach its goal of cutting waste worth \$2 billion over the next five years.

Silicon Valley startup Zest Labs has just launched a sensor-based logistics system called Zest Fresh. It assigns each pallet of produce an individual code that marks product type and data related to its exposure to the elements, which would impact its life. That information is uploaded to the company's proprietary cloud where the data can be tracked by anyone in the value chain, from farm to distributor.

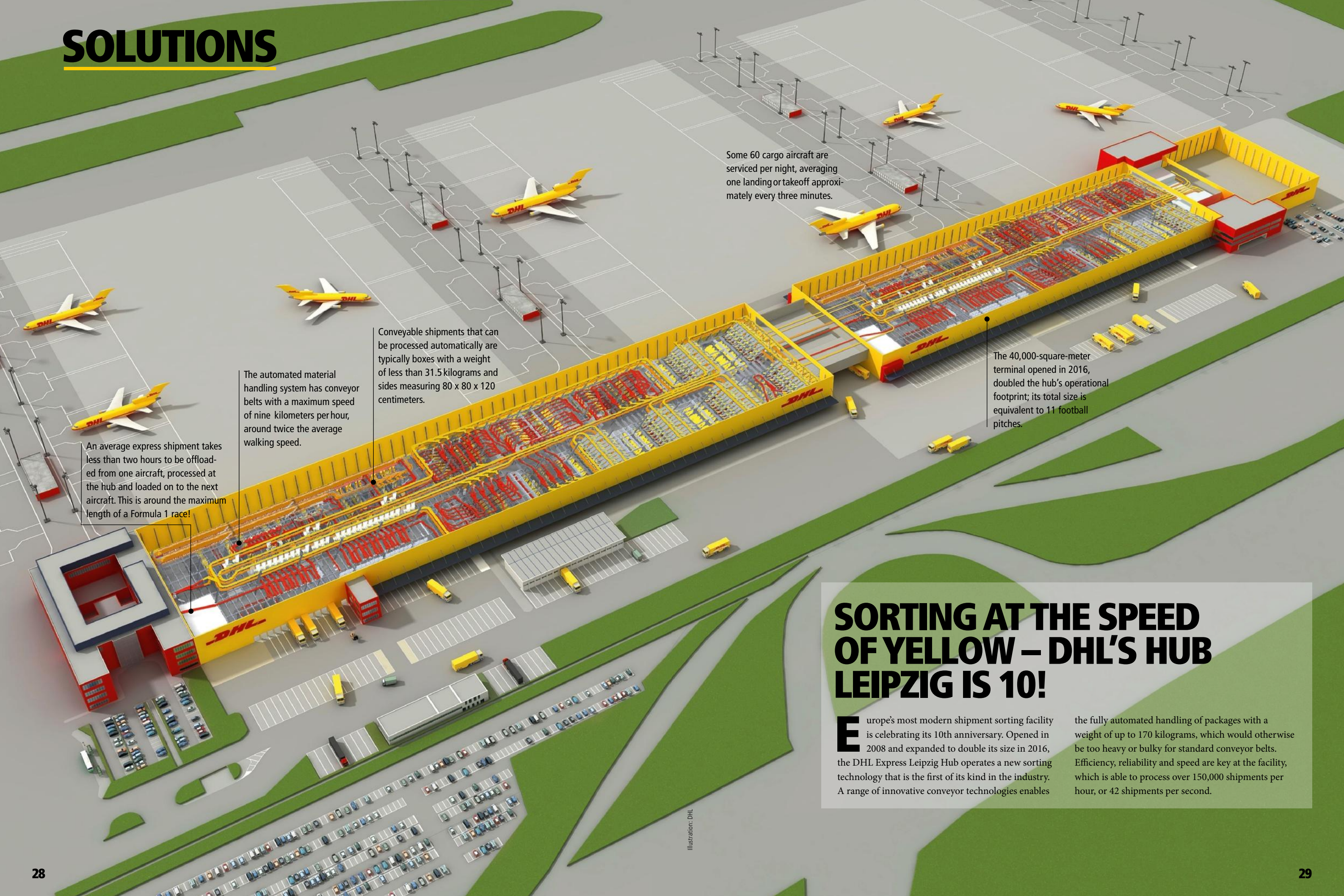
Another provider of sensor-based freshness information is Florida-based FreshSurety, which uses inexpensive, disposable sensors to measure and report temperature, moisture and metabolite data for every food type at 10-minute intervals from the time a pallet is assembled in the field to the time it's broken down at the retailer.

Everybody wins

FreshSurety CEO Tom Schultz calls the company's capabilities a real game changer. “Up to now you've had a \$600 billion business losing \$200 billion a year in waste, but no one has had any ideas about detecting freshness? By harnessing big data, we have created a turnkey system for every partner in the supply chain to access at any time. Blockchain doesn't tell you if something is fresh, but we could say instantly if those strawberries, say, will last three days or 12 days at any stage.”

This kind of joined-up thinking is the only way that the global food chain can meet consumer demands while moving toward sustainability, according to Lenz. And the rewards, he stresses, can be enormous.

“Adding just two to three days to food's shelf life contributes to the reduction of food waste. Producers can then reduce production levels and make better use of their land,” says Lenz. “Overall, not only can they cut food waste and resources, they can reduce environmental damage too.” ■ *Boyd Farrow*



Some 60 cargo aircraft are serviced per night, averaging one landing or takeoff approximately every three minutes.

Conveyable shipments that can be processed automatically are typically boxes with a weight of less than 31.5 kilograms and sides measuring 80 x 80 x 120 centimeters.

The automated material handling system has conveyor belts with a maximum speed of nine kilometers per hour, around twice the average walking speed.

An average express shipment takes less than two hours to be offloaded from one aircraft, processed at the hub and loaded on to the next aircraft. This is around the maximum length of a Formula 1 race!

The 40,000-square-meter terminal opened in 2016, doubled the hub's operational footprint; its total size is equivalent to 11 football pitches.

SORTING AT THE SPEED OF YELLOW – DHL'S HUB LEIPZIG IS 10!

Europe's most modern shipment sorting facility is celebrating its 10th anniversary. Opened in 2008 and expanded to double its size in 2016, the DHL Express Leipzig Hub operates a new sorting technology that is the first of its kind in the industry. A range of innovative conveyor technologies enables

the fully automated handling of packages with a weight of up to 170 kilograms, which would otherwise be too heavy or bulky for standard conveyor belts. Efficiency, reliability and speed are key at the facility, which is able to process over 150,000 shipments per hour, or 42 shipments per second.

THE DAY AFTER TOMORROW

Which major forces will reshape logistics over the next decade and beyond? New research brings the future into focus.

Logistics is set to undergo the biggest transformation in its history. That's the headline finding of a survey of more than 10,000 logistics professionals and technology experts. The work, which was conducted by DHL Trend Research, highlights 28 separate trends that are reshaping the sector, grouping them into four primary categories: customer centricity, sustainability, technology and people.

The latest DHL Logistics Trend Radar report is the fourth in a series that has been running since 2013. The research is developed through the analysis of mega- and microtrends as well as direct input from partners, including research institutes, tech players, startups and customers. Most of the insights are collected firsthand from over 10,000 logistics professionals and technology experts who visit the DHL Innovation Centers each year. The findings are then aggregated and reflected on the Logistics Trend Radar, which acts as a dynamic and strategic foresight tool that tracks the evolution of trends spotted in earlier editions and identifies promising new trends with every update.

"Our Logistics Trend Radar acts as a roadmap for innovation, helping to structure and catalyze further industry-leading research and projects together with our customers and partners," says Matthias Heutger, Senior Vice President, Global Head of Innovation & Commercial Development, DHL. "In this edition, we focus strongly on the digital revolution happening in the industry and its impact across four key elements defining the future of logistics."

The customer at the center

The first of those elements is customer centricity. Across sectors, the report notes, customers are

demanding a faster and more convenient logistics experience. In large part, that's due to the ever-increasing fraction of goods that are purchased online. E-commerce makes the speed and accuracy of an organization's logistics processes very obvious to the customer: Many of them happen in the time between the order and receipt of goods.

The expansion of e-commerce into new areas is adding extra layers of logistics complexity. Business customers are demanding the same service levels as consumers, as more B2B categories move online. Customers are purchasing more time and temperature-sensitive goods over the internet. This "fresh chain" will require new innovations in the packaging, storage and delivery of goods such as groceries and pharmaceuticals. And there is still the opportunity to remove the remaining inconveniences from online shopping, such as the need to log in and order goods or wait around for them to arrive. Another key area for innovation will be the integration of last-mile logistics services with smart homes and connected

vehicles, for example by granting temporary access to trusted couriers so packages can be securely deposited while the owner is away.

Logistics cleans up

The second major trend is sustainability, which the report's authors say will become a mandate to operate in the logistics industry. Governments, cities and solution providers are already committing to sweeping agreements to cut down on carbon dioxide emissions and waste. DHL, for example, has committed to becoming emissions-free by 2050. Green energy logistics – the electrification of logistics fleets and facilities – provides huge potential for logistics to become more environmentally friendly. Smart containerization in transportation will also be important in developing environmentally-friendly formats for delivery in congested cities.

The digital dividend

Then there's technology. The report notes that a number of significant technologies are now reaching

a tipping point: Their price has come down and performance has risen to the point where they are ready for large-scale application in logistics and elsewhere. That's the situation today for artificial intelligence technologies, as well as for networks of low-cost sensors and communications networks that underpin the internet of things. A key enabling technology for logistics applications is the rollout of next-generation wireless networks that can significantly increase the economies and value derived from connectivity in the supply chain. Another trend highlighted by the report is blockchain: The secure distributed database technology that underpins cryptocurrencies such as bitcoin. Here, the authors warn, there has been a lot of hype and promise, but achieving industry buy-in may prove a significant hurdle to adoption.

People still matter

Finally, there are people. Even though robotics and automation will make a significant impact in logistics in the coming years, people will remain at the heart of the sector. The authors suggest that highly repetitive and physically intensive tasks will be aided by technology, enabling people to do more meaningful tasks that require management, analysis and innovation. That will force companies to rethink their workforce policies, finding ways to attract, develop and retain people with new skills, and to support the existing, aging logistics workforce.

While the latest Trend Radar report paints an exhilarating picture of technology-driven innovation and transformation, the authors are careful to point out that predictions are always risky. "We know from experience that the impact of some trends will not materialize. Innovation does not follow a linear path – the success of some trends will rely on culture and capabilities as much it does on breakthrough technologies and business acumen," says Markus Kückelhaus, Vice President Innovation & Trend Research, DHL Customer Solutions & Innovation. "That's why we need to actively engage firsthand on driving the development of these trends." ■ *Boyd Farrow*

The DHL Logistics Trend Radar 2018/19 is available for download at:

 www.dhl.com/trendradar

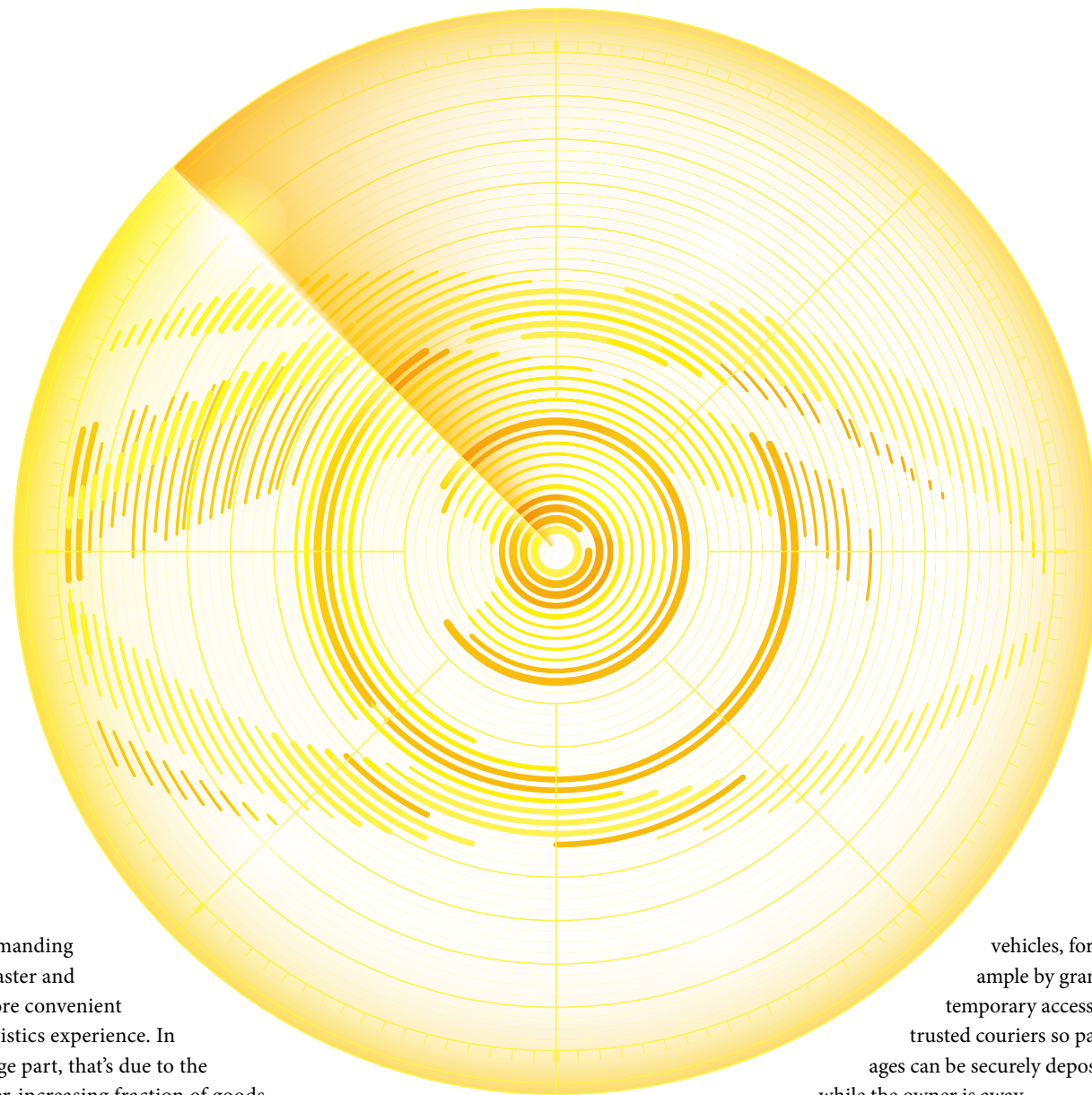


Illustration: DHL

TRUST MATTERS

It's often been said that there's no place for emotion in business. Yet at the same time, trust is considered the foundation of any strong organization and an essential building block for success in the workplace. So how do you go about building an environment of trust?

It is the one thing that changes everything. It's not a nice-to-have; it's a must-have. Without it, every part of your organization can fall, literally, into disrepair.

In an essay in the Harvard Business Review, authors and business leaders Stephen M.R. Covey and Douglas M. Conant made the strongest possible case for building trust in business. With trust, they said, all things are possible – most importantly: continuous improvement and sustainable, measurable, tangible results in the marketplace.

For the Great Place To Work® institute too, it all comes down to trust: “Decades of research,” says the company’s website, “show workplaces with high-trust cultures see higher levels of revenues, innovation, customer and patient satisfaction, employee engagement, organizational agility, and more.”

And yet, surveys regularly cite lack of trust as a big obstacle in companies. A recent survey by U.S. management consulting firm Tolero Solutions found that 45 percent of people said lack of trust in leadership was the biggest issue impacting their work performance. This was echoed by the 2016 Global Generations study, conducted by global consultancy firm EY, which found that less than half of global respondents had a “great deal of trust” in their current employers, bosses or colleagues.

Trust is “the glue”

According to best-selling author and expert on self-development Brian Tracy, trust should be fostered as a priority within companies as it is “the glue that holds all

relationships together, including the relationship between the leader and the led. People can only put their whole hearts into their work when they feel secure and they can only feel secure when they can relax and trust you completely.”

Building trust in a company is a two-way street. Employees need to feel both trusted and, in turn, trust their immediate managers and the company’s management as a whole.

So how do leaders go about building a successful trust culture? Tracy advises them to act with integrity to inspire trust. “Integrity appears over and over as the most important leadership quality,” he says.

Additionally, he claims that a high-trust working environment can only be created when people feel free to make errors without consequence or judgment.

“When employees feel that they are free to make mistakes with no punishment or hostility, they develop better self-esteem and pride in their work,” says Tracy. “They enjoy their work much more, become more creative and work more effectively with other people.”

Other benefits to building trust include lower staff turnover, desirable work-related behavior, enhanced knowledge sharing and increased innovation.

In “Transparency: How Leaders Create a Culture of Candor,” Daniel Goleman, writer of best-selling book “Primal Leadership: Realizing the Power of Emotional

Intelligence,” joins with distinguished professors and authors Warren Bennis and James O’Toole in advising leaders to admit mistakes, share information openly, reward employees who take a different position or attitude and protect whistleblowers.

John Blakey, founder of the Trusted Executive Foundation, which helps leaders create strategies for building trust in an ever-changing work environment, says: “Trust involves risk and hope but has rational, emotional and moral components too.”

To kick-start a trust culture, Blakey suggests establishing “the three pillars that inspire trust – ability, integrity and benevolence.”

While most people understand the meaning and importance of the first two, Blakey believes benevolence is the key.

“Benevolence is about the small things that make a difference. The personal touch, the human touch. In a context of trust it means going above and beyond the profit motive to show care and concern. As a leader, it is benevolence that is going to help you trust me, alongside my ability and my integrity.”

Inspire, empower, include

Capital One is one company that has been pretty successful in establishing a culture of trust. The bank holding company, based in the U.S. state of Virginia, regularly appears on global “Best Companies to Work For” lists.

“An open, transparent culture is the primary way we foster trust and engagement,” says Mike Lynch, Capital One’s U.K. human resources director. “At all times, everyone needs to feel connected to the business and feel like they’re a trusted member of the bigger team.”

The company runs a range of annual events to keep people connected, including an offsite Mission Day featuring motivational guest speakers and workshops, Customer Week, Risk Day and a Data Expo. “Our leadership model focuses on how we inspire, empower and include our people,” says Lynch.

“We set the framework for our people to be the best they can be,” comments Lynch. “We’re also very open when talking about what’s not going so well and the challenges we face collectively.”

Pillars of trust

Workplace trust and its impact on business performance have also been studied by Interaction Associates, a U.S.-based learning and development company. Their 2014 survey “Building Workplace Trust” found that high-trust companies are 2.5 times more likely to be high-performing organizations relative to revenue than are the low-trust companies. The high-trust companies are also better at achieving other goals like competitive market position, customer loyalty and retention.

According to the research, it is clear that trust and performance move together. Organizations that are actively investing in leadership development and creating an environment based on trust and collaboration can expect to reap big financial rewards.

Cornell University’s 2002 study “The High Cost of Lost Trust,” for example, compiled interviews with 6,500 Holiday Inn employees across the U.S. and Canada. It found that hotels with just a one-eighth improvement in trustworthiness in their line management saw a 2.5 percent increase in profitability. ■ Angela Singleton

50
PERCENT

The share of CEOs who consider lack of trust to be a major threat to organizational growth

2.5
PERCENT

The increase in profitability from a one-eighth improvement in trust at 76 Holiday Inns in the U.S. and Canada

DELIVERED. GETS INVENTIVE WITH...

WHURLEY

The tech wizard behind the mind-controlled skateboard explains what excites him about innovation – and why quantum computing is his latest passion.

Whurley – the technology entrepreneur, quantum computing expert, speaker and author – certainly knows how to make an entrance. At one TED talk, for example, he arrived on one of his most famous inventions: a mind-controlled skateboard called The Board of Imagination. Wearing a special headset, he simply stood on the board, imagined the direction in which he wanted to go, and the wheels took him there – much to the amazement of his rapt audience.

The Board of Imagination is just one example of the mind-bending, groundbreaking products whurley developed at Chaotic Moon Studios, the creative tech company he co-founded in 2010. Other inventions include The Smarter Card, an autonomous shopping cart; The Helmet of Justice, a bicycle helmet fitted with seven cameras that start filming when triggered by the impact of a crash; and CUPID, a taser-firing defense drone. “The great thing about tech is that it changes dramatically all the time, whether you want it to or not,” says whurley, who was born William Hurley, but is now best known by his shortened computer username. “That means you have to keep learning, just to keep up.”

Born in the U.S. state of Virginia, whurley moved to Austin, Texas, in 1993, working first for Apple in research and development, and then for IBM, where he became Master Inventor. After getting involved with various startups, he became chief architect at tech company BMC Software. He then founded Chaotic Moon Studios (later bought by Accenture), followed by the financial tech company Honest Dollar (which was later acquired by Goldman Sachs), where whurley served as managing director. Earlier this year, whurley launched Strangeworks, a quantum computing software company, during a SXSW Convergence keynote. “Quantum computing – computers that take advantage of quantum mechanics – is going to revolutionize technology and make a big difference to industries like materials science, pharma, finance, energy and aerospace,” he says. Quantum computing is whurley’s latest passion and the focus of the book he’s currently working on, titled “Endless Impossibilities.”

But then whurley fizzes with enthusiasm about technology in general, and the impact it can have on our world all of the time. “In terms of incredible innovation,” he says, “this is the best time to be alive. Ever.”

Why are you so excited by innovation?

It can solve a lot of real-world problems. Take the “trash collector for the ocean” idea, which is basically a bucket that traps plastics floating in the sea; or the stationary bikes (developed by entrepreneur Manoj Bhargava) in India that you pedal to generate electricity for your home. Innovation

51 KPH

The top speed of whurley’s Board of Imagination

\$15 MILLION

The estimated value of the first commercially available quantum computer, built by D-Wave

doesn’t have to be about going to Mars to make a dramatic impact.

What was the last innovation that made a big impression on you?

I’m a big fan of Google Home, and the work Google is doing now with AI. Their latest technology is the Google Duplex – a virtual assistant that can make phone calls on your behalf. If you tell it you need a haircut, it places a phone call to the hair salon and makes an appointment for you. That’s pretty epic. However, it does bring into question the ethical challenges we face as technology advances.

Which of your own innovations are you most proud of?

A lot of people talk about the mind-controlled skateboard and The Smarter Cart – and yeah, I’m proud of those things. The primary function of innovation is to capture imaginations. And some super-cool things that I was involved with actually did that. The skateboard, for instance, was a literal manifestation of capturing the imagination. If I can inspire people with innovation, that’s exciting and gives me a real sense of accomplishment. And while I’m proud of those past accomplishments and innovations, I can’t wait to see what we can do next with quantum.

How can companies best approach risk?

Companies can only learn how to mitigate risk by taking risks. You’re never going to be able to edit all the risk out of a situation by planning it on a spreadsheet beforehand. Yes, you should mitigate risk as much as you can when you innovate. But I would argue not innovating is more dangerous. However, as I mentioned earlier, there are ethical challenges with technological progress. Google’s Duplex demo, for example, was met with some backlash from people questioning it on several fronts. These ethical challenges should be addressed by the innovators during the creative process, but they should also be prepared to take feedback after the release and quickly iterate to address any potential issues. Rapid iteration is a major key to innovation.

In its early stages, how do you tell a meaningless innovation from a potentially significant one?

That’s an interesting question. I don’t have criteria for that because it could potentially inhibit innovation. And the one thing I don’t want to see is an innovation standard. I don’t want any guidelines when it comes to creativity.

What do you say to people who worry about technology taking their jobs?

It’s inevitable that the continuous rise of technology will take jobs. What people don’t discuss enough is the amount of new jobs that will be created as a result. A report by the Information Technology and Innovation Foundation put out last summer looked at the “false alarmism” around automation, citing 150 years of historic examples where innovation and automation actually created jobs (and didn’t just eliminate them). Drones need drone technicians and handlers, right? ■

Tony Greenway

 www.strangeworks.com

Analyze this

**Analytics is here to stay whether you are a consumer or a business.
How will artificial intelligence strike a balance with human wisdom?**



AN ESSAY BY SWATI WIG

Swati Wig is a Partner at DHL Consulting. She leads the strategic logistics consulting practice for external customers, focusing on both core logistics transformation and staying ahead of the curve on topics such as digitalization, omnichannel and analytics. Her topics of specialization include energy, chemicals, consumer and retail.

Is travel in your blood? This headline in the newspaper caught my attention last week. The article talked about a low-cost airline having partnered with Dr. Richard Paul Ebstein, a world-renowned expert in genetics, human biology and neuroscience, to determine whether there is such a thing as a wanderlust gene. If you carry the 7-repeat or the 2-repeat of the dopamine D4 receptor gene, DRD4, you are part of 20 percent of the population that is more inclined to seek out novelty, travel and adventure.

Travelers have been invited to join an experiment to have their saliva tested to earn the badge of someone with travel as an innate need, in the process enabling the airline to gain insights into their travel preferences based on multiple variables (background, cultural preferences, opportunities, to name a few) and send customized

travel-related information and offers their way. In other words, the airline and the expert are currently in the process of collecting data (lots of it) before they can analyze it to make business decisions for an organization.

In a separate situation, I recently met a potential data science candidate for a recruiting conversation, and as we were getting coffee, I casually asked him whether he sees most of the data science community tending to come from a particular field of study or experience. He (equally casually) responded by sharing with me the analytics results of his trawl of global LinkedIn profiles.

Analytics is here to stay. Multiple sources place the market size for analytics at approximately \$200-250 billion by 2025, with the field categorized into four segments: descriptive and diagnostic analytics, which look to the past to explore what happened and explain why; and the futuristic categories are predictive analytics,

which aims to forecast what will happen (based on historic data), and prescriptive analytics, which explores how we can make it happen.

How different sectors benefit from analytics

Automotive provides numerous use cases in manufacturing (near real-time demand analytics in collaboration with dealerships for postponement of customization), quality management (product defect analytics to provide early warnings of failure for recall planning, remote performance tracking to predict spare parts demand) and parts availability (Inbound 2 Manufacturing analytics to optimize scheduling of inbound parts ordering and delivery to reduce component inventory).

Consumer & Retail features prominently in any analytics-related conversation. Product and channel analytics help define omnichannel strategies and reduce product launch lifecycles, while consumer analytics is what we saw in our wanderlust example as well. Multiple retailers now apply sentiment analysis to consumer feedback, resulting in more accurate forecasts for production planning, reduced time to market, minimizing obsolescence and hence reduced need for discounting.

Energy & Chemicals has been leveraging analytics in upstream and midstream for a long time, with newer use cases now being identified in downstream and renewables. Overall use cases for the sector in upstream include reservoir interpretation, optimizing low-rate wells, matching real-time drilling data with production data from nearby wells, doing intelligent pipeline monitoring, in downstream this includes understanding distributor demand for chemicals or lubricants, and discussing how convenience retail can become as key a business line as fuel. For renewables forecasting failures in solar plant sensors and predicting weather conditions to make wind energy projects bankable are key use cases.

Engineering & Manufacturing has use cases to increase efficiency, especially in manufacturing. These include risk modeling to predict sourcing delays, develop contingency plans and diversify the supplier base; equipment failure prediction and pre-emptive maintenance; and production line analytics to reduce raw material and work-in-progress inventory in multi-stage manufacturing.

Getting the edge on the competition

Life Sciences and Healthcare has use cases in business model innovation, with patient analytics for on-demand healthcare and R&D analytics for reduced batch sizes and inventory levels; and in terms of shipment tracing and analytics of data from multiple sensors to ensure product integrity in cold chain logistics and eliminate the risk of counterfeit products, which can prove fatal to lives. As the sector explores increased direct-to-market operating setups, analytics provides the speed and flexibility such supply chains will require.

In the Technology sector, demand forecasting is a prime candidate for product launch support, especially for consumer technology products with short life cycles and hype-based demand. Leveraging analytics to optimize the inventory of spare parts for any capital equipment, as well as predictive maintenance for increased uptime and predicting aftermarket demand, can provide just that extra edge over a competitor.

What organizations need to ask themselves

Supply chain & logistics is embedded in all the above, with sector-agnostics implications for the industry. Diagnostics and descriptive analytics can be applied to current supply chain flows to identify optimization potential, e.g. in consolidation, warehouse footprint reduction, transport optimization, risk and resilience planning to identify key facility locations in the network, and supplier assessments. Predictive analytics can be applied to demand forecasting to reduce safety stock, with a link to both logistics capacity and the organization's production planning. Freight rate analysis enables better procurement decisions, predictive maintenance of any logistics assets, and with rising congestion in cities, also helps identify the optimal route for a delivery to a customer. Any B2B and B2C flows are key in analyzing distributor and consumer buying patterns, again enabling a supply chain network that sets customer experience and service levels as top priorities, and does so cost-effectively and sustainably.

In this new analytics environment, there is much food for thought for organizations (raising issues that may still need to be answered with judgment, wisdom and experience): How can analytics be a competitive advantage? What ecosystem is needed for success? Are organizations ready for open sourcing to leverage tools and methods? How will intellectual property guidelines around this evolve? How will organizations engage analytical talent?

The deeper we look within our organizations, the more use cases and data we will find. A customer recently asked me whether we need analytics – just because we have the data, and now the ability to mine it, does it mean we must? It is a relevant question. The key lies in identifying the right use cases: Is the problem statement clearly defined? Is the problem business-critical enough? Do we have enough data? Is this available in the clean format required in order to apply sophisticated analytical tools to it?

As long as we keep asking ourselves this question for every use case we apply analytics to, and approach it with the openness and curiosity of an explorer, we may be surprised at what we find. Let the wanderlust continue! ■

To find out how the wanderlust gene experiment panned out, or just to discuss analytics over coffee, please feel free to reach out to Swati at swati.wig@dhl.com.

WHAT'S THE STORY, MR. SAMRA AND MR. NOUR? IN THE SAME BOAT

Last year, adventurer Omar Samra and triathlete Omar Nour attempted to row the Atlantic in a DHL-sponsored boat. The voyage, which was nearly fatal for both of them, is now the subject of a new documentary.

Omar S: When we met in 2013, we clicked right away. On the surface we're very different, but we're both driven people. Plus we've now stared death in the face together and survived. We've become close, like brothers. We were intrigued by the physical and mental challenge of rowing the Atlantic in the 2017 Talisker Whisky Atlantic Challenge, a voyage of more than 5556 kilometers (3,000 nautical miles). The trouble was, neither of us had been in a rowing boat before. Still, we signed up within two hours of receiving the invitation.

Omar N: We also wanted to do it to raise awareness of the plight of refugees and displaced people, many of whom come from our part of the world and have to cross dangerous oceans to reach safety. It's easy to watch the news and get desensitized to the perils they face;

so although we would be well-prepared, have the best equipment, and get to go back home to our families, we knew we would have a difficult time out there. It seemed like such a fitting cause. We chose the Twitter hashtag #Rowing4Refugees.

Omar S: The logistics of the project were massive. We needed a high-tech boat with equipment from all over the world shipped to the start of the race in La Gomera, Canary Islands, so it made sense to partner with DHL. Then there were the courses and certifications we had to complete – and the training we went through was incredibly tough. But we stayed focused and in a matter of months went from knowing nothing about boats, navigation or rowing to being one of the best-prepared teams in the race. Otherwise the outcome of our story could have been very different.

Omar N: Our boat measured 7.5 meters in length and was made of wood, fiberglass, carbon fiber and Kevlar. It was equipped with solar panels, tracking beacons and a satellite telephone.

When we set off it was hard going, with each of us rowing two hours on, two hours off and battling with an angry ocean. But on day nine disaster struck just before sunrise when we hit a massive wave and upturned. And worse, because the capsize was so aggressive it damaged our cabin, which filled with water – so the boat was unable to self-right.

Omar S: Then our struggle for life really began. We couldn't get the emergency raft to inflate properly and at one point had to watch our distress flares float away. Back on land no one knew where we were, and the race owner said it was the darkest day of his life. Thankfully, 13 hours after capsizing we were rescued by a cargo ship. The story of how we survived is told in a new documentary called "Beyond the Raging Sea."

Omar N: Would we enter the race again? We're giving ourselves time to explore what happened, and we don't want to do it just because of our egos. That said, never say never... ■ As told to Tony Greenway

 www.beyondtheragingsea.com



FACT: Samra was the first Egyptian to climb Mount Everest. Nour is Egypt's first professional triathlete.

650 The approximate number of successful Atlantic crossings by rowing boat

40-50 The approximate number of days both men were expecting to spend at sea

29

The age of Susie Goodall, the youngest participant in the round-the-world Golden Globe Race 2018. Goodall celebrated her 29th birthday earlier this summer while sailing her 36-foot Rustler – "DHL Starlight" – alone in the Atlantic Ocean on day 27 of the 300-day, nonstop, 30,000-mile solo race. Competitors in the Golden Globe Race are forbidden from using any modern technical sailing aids, so birthday wishes to the young British sailor were relayed via the DHL radio communications network.

 www.discover.dhl.com/susiegoodall.html

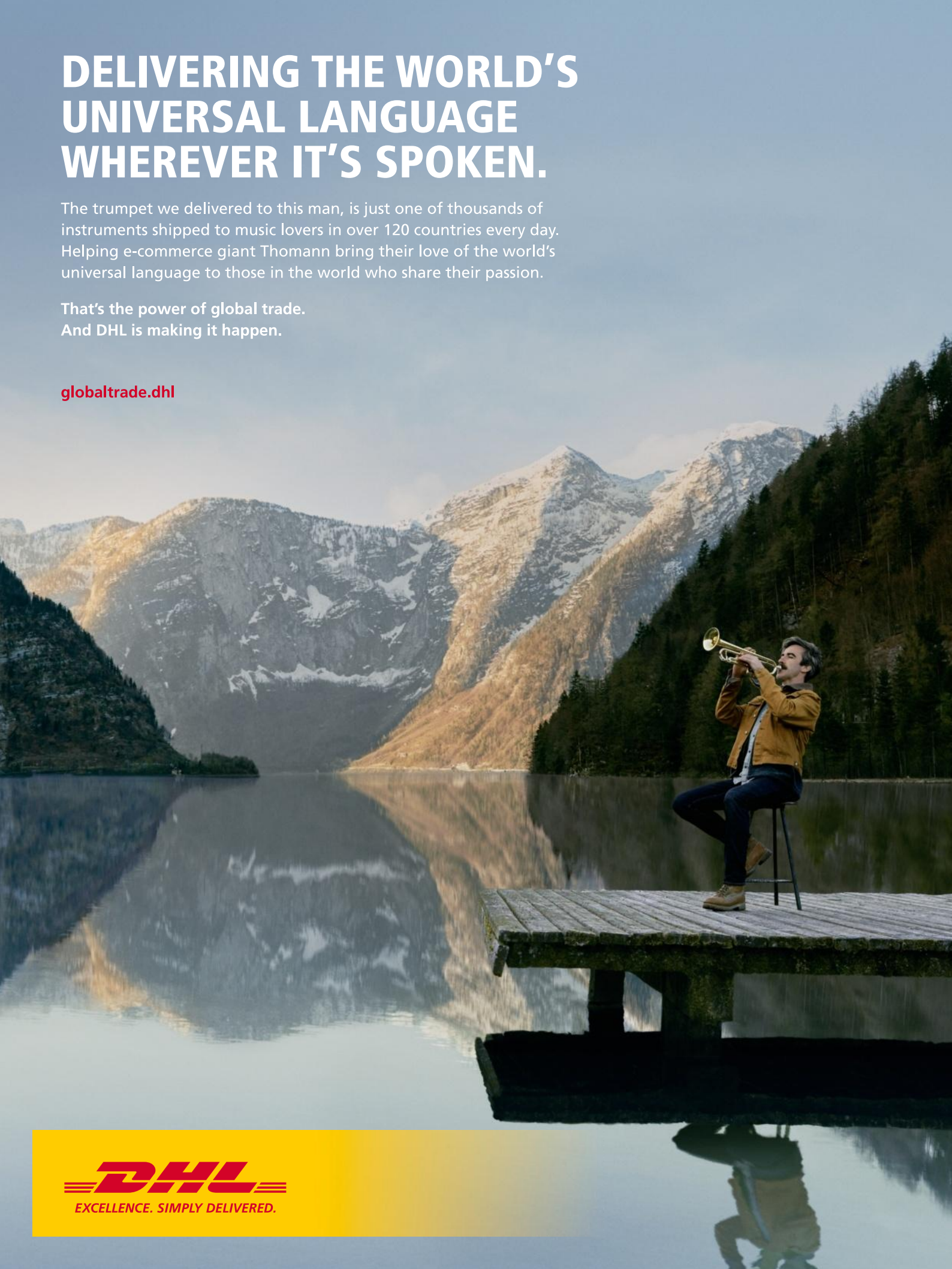


DELIVERING THE WORLD'S UNIVERSAL LANGUAGE WHEREVER IT'S SPOKEN.

The trumpet we delivered to this man, is just one of thousands of instruments shipped to music lovers in over 120 countries every day. Helping e-commerce giant Thomann bring their love of the world's universal language to those in the world who share their passion.

That's the power of global trade.
And DHL is making it happen.

globaltrade.dhl

A man with a mustache, wearing a brown jacket and dark pants, sits on a wooden stool on a wooden dock. He is playing a trumpet. The dock is over a calm lake that reflects the surrounding landscape. In the background, there are large, rugged mountains with patches of snow and dense evergreen forests. The sky is a clear, pale blue.

DHL
EXCELLENCE. SIMPLY DELIVERED.