

# Delivered.

The Global Logistics Magazine

ISSUE 02/2020

## BUSINESS

### MEDICAL MARVELS

Learn how critical medical supply chains are being managed during the COVID-19 crisis

## SOLUTIONS

### OFFICE OF THE FUTURE

Understand the changing nature of workspaces

## VIEWPOINTS

### OUT OF THIS WORLD

Meet Mark Wiese, the logistics manager behind NASA's new space mission

# WHAT'S THE BIG IDEA?

The tech innovations already shaping our world

**DHL**



**Dear Reader,**

Producing an issue of *Delivered.* takes time, as our team carefully peruses and learns about industry and business trends that will be of value to you. They then reach out to business leaders across the world to ask for their viewpoints and contributions.

When this issue was first planned and put together, the world around us was a very different one. Now we are facing an extraordinary situation. COVID-19 has disrupted all of our lives, and it's hard to predict when things will return to normal.

We considered whether we should publish an issue at all – and our conclusion was “Yes, we must.” Why? Because we believe that, despite the unprecedented situation we are all facing, food for thought and business insights are still needed, as we must stay on top of trends in order to be geared up for when times return to normal. And I believe that, here and there, during these challenging times, we also need to give ourselves time to direct our focus away from crisis and turmoil and allow some mental space for learning or inspiration.

I sincerely hope that this issue of our magazine provides you with just that.

So, in this issue we investigate how new technologies – from the internet of things to artificial intelligence – are promising to change the world. But where do the big innovations actually stand, and which ones are still finding their niche? Read more in this issue's **Technology Focus**.

Space is still the final frontier. We talk to **Mark Wiese**, a Logistics Manager from NASA, about the ambitious Artemis mission, which is planning to land the first woman and the next man on the moon by 2024, and then use the lunar surface as a launchpad to Mars.

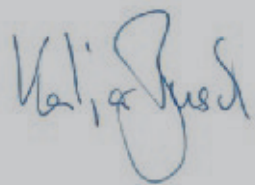
There are no frontiers for DHL back here on Earth. I am sure you have already seen that our teams are working hard to support customers across all sectors, and ensure that critical goods reach their destinations and supply chains stay robust and flexible. Our couriers are still delivering wherever possible across the globe. Please read more about the team efforts especially in supporting the Life Sciences & Healthcare sector in **All hands on deck**. I am incredibly proud of our teams, who are all pulling together “as one” at this time to do incredible work to deliver for our customers.

From planners to warehouse workers, pilots, sector experts, customer service and of course our delivery teams and many more, in all corners of the world and wherever currently possible, everyone is tirelessly at work, finding solutions and going above and beyond to ensure that whatever can be done to keep the supply chain moving is done.

At this point I also want to mention how grateful I am for the many notes of thanks and appreciation we have received from our customers. It's both gratifying and motivational for our teams to know that their work is acknowledged and appreciated.

I hope you'll find the stories in this issue inspirational and enlightening at this uncertain time.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Katja Busch', with a stylized, flowing script.

Katja Busch  
Chief Commercial Officer, DHL





**10**

**FOCUS**

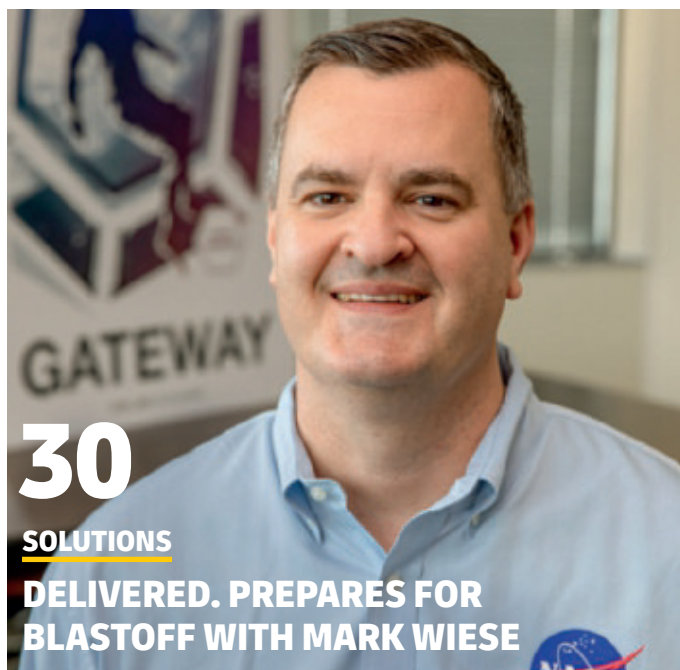
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### **Paper**

This magazine is made from  
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## SHAKY START FOR THE NEW DECADE

With trade sanctions, activism and black swan events such as COVID-19 among the key risks in 2020, businesses must prepare to manage the unpredictable – especially in a highly connected world with integrated supply chains. Taking into account hundreds of thousands of events from across the world, the Resilience360 Annual Risk Report 2020 offers industry professionals insights into risk trends so they can make more informed decisions that help protect the supply chain and ultimately the bottom line.

 [bit.ly/Resilience360-riskreport-2020](https://bit.ly/Resilience360-riskreport-2020)

## URBAN LUNGS

For any of us who live in urban areas, the air we breathe is a real concern. The World Health Organization estimates that 90% of city dwellers breathe in polluted air every day, and that 7 million deaths a year are caused by air pollution. But nature is fighting back – with a little help from the internet – in the shape of City Trees. These living walls-cum-benches use mosses to filter out pollutants, such as harmful particulates and nitrogen oxides, from the air around us, and produce oxygen. Automated water and nutrient systems controlled by internet of things technology nurture and keep them alive. Each of these green towers has the air-cleaning capability of 275 real trees, making them ideal for urban landscapes where space is limited. They also collect data on the air quality around them.



 [bit.ly/CiTree](https://bit.ly/CiTree)

## SQUEEZY DOES IT

We brush our way through some 20 billion tubes of toothpaste a year, but those selfsame tubes – a mixture of plastic and aluminium – are impossible to recycle. Now the engineers at Colgate have come up with the world's first recyclable toothpaste tube, made from the same high-density polyethylene used for milk containers – but squeezable rather than hard. Colgate has said it will share its breakthrough with rival manufacturers in a bid to cut the use of the old-style packaging.



## IT EVOLVES

DHL Freight is installing a new IT system as a first step toward creating a single transport management system for all its Europe freight operations. Named EVO, as in "evolution," the new system creates a single platform that unites IT processes from beginning to end – from order entry to invoicing, and pickup to delivery. The new system has been installed at all terminals in France, and is set to be implemented next in Turkey. Everyone can access consolidated customer information in real time, which in turn enables a high degree of automation and cuts administrative work.

 [bit.ly/DHLFreight-EVO](https://bit.ly/DHLFreight-EVO)

## CONNECTING PEOPLE. IMPROVING LIVES.

The 2019 DPDHL Group Sustainability Report "Connecting People. Improving Lives." is now available in print and online in both English and German.

To find out more, visit:



[www.dpdhl.com/2019sustainabilityreport](http://www.dpdhl.com/2019sustainabilityreport)



## LISTEN UP

DHL has launched a new logistics podcast – developed, produced and presented entirely by employees. The first five episodes of "Living Logistics" focus on topics integral to the group's work: corporate responsibility, sustainability, and, in the very first instalment, employee volunteering. The first episode – "Forklifts. Typhoons. Lemurs." – looks at DHL's work in the fields of disaster relief, education and social integration. It meets two DHL employees who volunteer their logistics expertise to help manage the flow of relief supplies after natural disasters, as well as workers who offer forklift driver training courses for refugees and provide humanitarian logistics assistance in disaster areas. Subsequent episodes cover topics including sustainable transport networks, alternative drive technologies and biodiversity. The podcasts are available in both German and English, and you can listen via all major platforms such as Spotify and Apple, as well as at [dpdhl.com/podcast](http://dpdhl.com/podcast).



[bit.ly/LivingLogistics-podcast](http://bit.ly/LivingLogistics-podcast)



## MOJO'S GOT THEIR LENSES WORKING

It's the stuff of many a Hollywood film: smart contact lenses that project information in front of a user's eyes. But sci-fi speculation may have just become reality, with Mojo Vision's new wearable prototype. Moving away from AR glasses, the Mojo lens's tiny green display focuses light directly on to the retina. The Saratoga, California-based tech company says the lens – which links wirelessly to a mobile device – could display information such as your heart rate when you're exercising, translate languages in real time or show you the latest news headlines or sports results.

# 250

The number of years since  
Ludwig van Beethoven's birth in Bonn



With its global headquarters based in the composer's home city, Deutsche Post DHL Group is celebrating the 250th anniversary of Beethoven's birth by releasing a commemorative stamp. 626 million 80-cent stamps will be released in a record first issue, the highest in the company's 25-year history

## ALL TOGETHER NOW

Beneath the gloomy and dramatic coronavirus headlines there is also something else: stories of collaboration and dedication as people, companies and countries help each other through the crisis.

**N**othing travels faster than the speed of light,” noted Douglas Adams, author of “The Hitchhiker’s Guide to the Galaxy,” going on to add: “with the possible exception of bad news, which obeys its own special laws.”

If you want proof that Adams was right, look no further than the unsettling, unreal, almost dystopian events of the past few months. Bad news does indeed travel extremely fast – and, sadly, at the time of writing, there’s lots of it to go round. Worse than that, there is – seemingly – no other story in town. Every downbeat headline, every portentous news bulletin, every ominous conversation is fully geared around COVID-19 and its devastating fallout.

Yet if you dig beneath the constant gloom, there are countless tales of people and companies pulling together at a time of crisis. There is light to be found in the dark if you care to look for it. It’s just that, generally, good news hasn’t been getting much airtime of late.

Take the perfume arm of French luxury goods multinational LVMH, which repurposed its manufacturing line to make hand sanitizer, free of charge. Or electronics giant Foxconn and fashion houses such as Chanel, YSL, Prada and many others, which switched production to make surgical face masks after demand soared worldwide. In the U.K., more than 60 companies – including Vauxhall and Airbus – have joined the effort to produce 20,000 ventilators in two weeks. And many others are repurposing their production lines – such as Bosch, which developed its own COVID-19 speed test, or Ford and GE, who have teamed up to make ventilators. Medical device-maker Medtronic went one step further and shared the design specifications and code for its portable ventilator for free. Meanwhile, in Spain, which has been hit particularly hard by the virus, Inditex, the owner of fashion retailer Zara, offered to make scrubs for medics in the country. Sections of the hospitality industry have also stepped up to do their bit – some

luxury hotels are, for example, reinventing themselves as quarantine centers.

It’s not just big business that has been working to beat the disease. Entire countries have been forgetting their differences and pooling their resources. For example, in January, the EU sent 50 tons of protective equipment to China, where the coronavirus outbreak began. Later, when the pandemic took hold in Europe and then worsened, China sent supplies and equipment to the EU, with shipments emblazoned with the Chinese flag and the words “The friendship road knows no borders.” After speaking to Li Keqiang, China’s premier, European Commission president Ursula von der Leyen emphasized that they were ready to “support each other in times of need”; a fact underlined when China – alongside Cuba and Russia – sent teams of medics to those areas of Italy most badly affected by the disease. Meanwhile, the U.A.E. sent aid to Syria, Iran, Pakistan and a number of other countries.

The magnitude of the situation has also thrust into the spotlight those workers and institutions usually taken for granted. It would certainly explain why people in lockdown across Europe have been standing on their doorsteps and at their windows in coordinated displays of national unity to applaud and cheer healthcare staff. Other heroes operating at the sharp end of the crisis have been revealed to be delivery drivers and warehouse and supermarket staff, who are keeping supply chains running and shelves stocked and stacked with essential goods. This task, however, has become more challenging by the day. Many countries have been telling their citizens to stay at home, which has seen online orders spike by an average of 20%-30%. No wonder DHL teams and couriers have been working flat out to serve their customers. Suddenly, more of us are relying on doorstep deliveries than ever before.

Markus Reckling, Managing Director DHL Express Germany, comments: “Our mission at DHL is “Con-



necting people. Improving lives.” Never has this been more important than today. I am extremely proud of everybody at DHL Express and our teams across all the DHL divisions for working so hard and helping to keep these global supply chains running. Seeing that our customers are really valuing this motivates me big time. Our NPS score, which is a metric we use to measure customer satisfaction, has skyrocketed to all-time highs over the last three weeks.”

Meanwhile it’s also the hour of volunteers – such as the 500,000 who signed up to help the U.K.’s National Health Service. “I have signed up to volunteer as a driver,” says Chris Weeks, who has decades of experience as DHL’s VP of Humanitarian Affairs. “In times of crisis, we must do whatever we can to help.”

The coronavirus has also prompted big philanthropic gestures from wealthy individuals, among them Chinese billionaire Jack Ma, the co-founder and former executive chairman of Alibaba Group, who donated 20,000 test kits, 100,000 masks and 1,000 medical-use protective suits and face shields to all 54 African nations, plus ventilators and other equipment to New York, which has been hit hard by the pandemic. Designer Giorgio Armani contributed over \$2 million to hospitals in Rome and Milan, as well as to the Italian Civil Protection Agency. Oprah Winfrey donated \$10 million to various organizations, and Bill Gates announced that the Bill and Melinda Gates Foundation would give \$100 million to help global coronavirus detection, isolation and treatment. Plus, Eric Yuan, founder of video conferencing company Zoom, made his service free for unlimited use in affected countries, including China and Italy, as well as in schools across the U.S.

That’s been particularly welcome because, in these days of social distancing, video conferencing is more important than ever. It’s thrown a lifeline to people working from home and helped the mental health of isolated families and friends who are starved of human contact. Virtual coffee mornings and virtual evening drinks meetups have become commonplace.

Under lockdown, Italians have been enjoying a virtual version of their vibrant cocktail hour, which they have dubbed “Skype-aperitivo.”

“With nobody certain how long the lockdown will remain in place, we could not let this stop us from having our regular exchange,” says Parma-based TV executive Roberto Iotti, who began video calling his friends once or twice a week for a drink and chat. “As many of us use Skype for business anyway, we had the idea to just meet up virtually via Skype’s video function – ‘share’ a drink virtually and catch up on each other’s news.”

And while cinemas, theaters and concert halls have closed, many artists are determined that the show must go online, with pop stars and musicians – including Chris Martin, John Legend and Keith Urban – livestreaming free concerts on social media. Arts organizations such as the National Theatre in London,

Berlin’s Schaubühne theater and the Metropolitan Opera in New York have been streaming their productions online for free.

“I have two decades of crisis experience,” says Weeks, who has dealt with airport logistics in the aftermath of disasters ranging from tsunamis to floods and earthquakes.

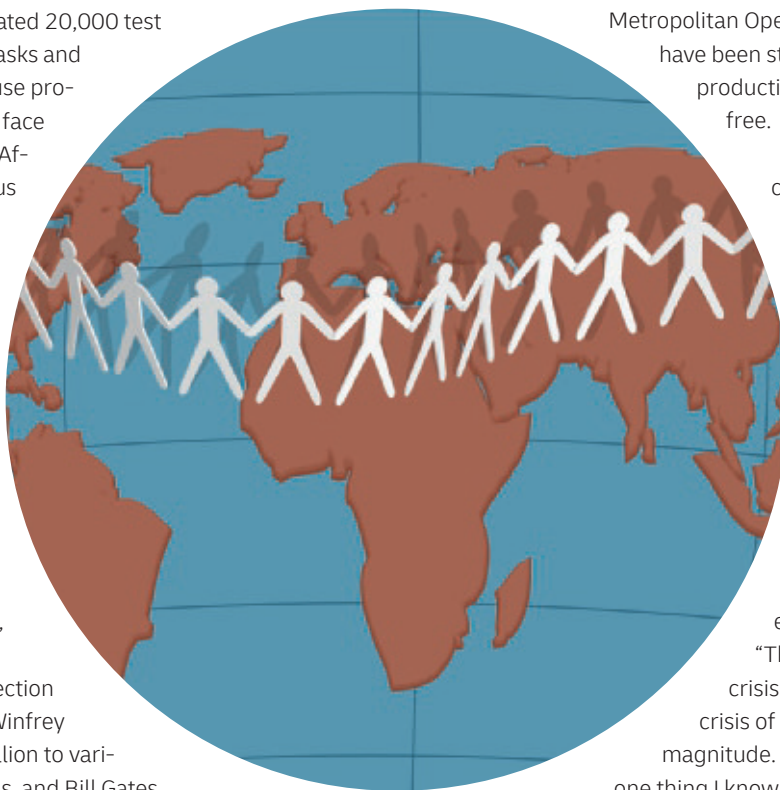
“The COVID-19 crisis is certainly a crisis of unprecedented magnitude. But if there is one thing I know for sure, it’s

that the worst crisis brings out the best in human nature – I’ve seen it time and time again.

And it’s the spirit of humanity and everyone working together that overcomes, and endures, until we come out at the other end. More than ever, we need to forget about competing and collaborate to beat this thing.” ■ **Tony Greenway, Michelle Bach**

**For a continuous update of positive news, please check out these links:**

-  [nyti.ms/NYTimes-goodnews](https://nyti.ms/NYTimes-goodnews)
-  [www.goodnewsnetwork.org](http://www.goodnewsnetwork.org)
-  [tank.sinatra](https://www.instagram.com/tank.sinatra)







# HOW IS DISRUPTIVE TECHNOLOGY RESHAPING OUR WORLD?

As the 21st century enters its third decade, have the big innovations of the past few years delivered on their early promise?





**STREETWISE:**  
Robots are being  
used outside traditional  
manufacturing roles,  
like this robot  
spraying disinfectant  
in Wuhan, China.



Since the millennium, the world has enjoyed a period of intense innovation and rapid technological progress. Ranked highly by market capitalization, the giant industrial, chemical and energy companies that dominated stock markets for much of the previous century have been all but replaced by a new generation of software and technology firms. Billions of dollars have flowed into R&D investments in computing, communications and related sectors. Five sectors – computer technology, electrical machinery, sensors and measurement, digital communication and medical technology – now account for almost 30% of annual patent applications.

Yet even big ideas often have to travel a long and arduous road from invention to world-changing impact. The first electric car rolled through the streets of Wolverhampton in the U.K. in 1884, for example, but the idea languished for well over a century until the combination of better batteries and heightened environmental concern ignited the current period of rapid EV growth.

Other innovations end up as mere footnotes in the history books when they fail to find significant markets, or are superseded by competing ideas. In 1930s London, cranes, bridges, elevators and rotating theater stages all operated on hydraulic power distributed through a network of high-pressure pipes from steam-driven pumping stations across the city. Today, the hydraulic power stations are gone, and those jobs are done by electric machines.

So where do the more recent crop of innovations stand? Which of the 21st century's big ideas are really

reshaping the world, and which have yet to find their niche?

### Connectivity is everywhere

Perhaps the biggest change story of the past 20 years is the growth of connectivity, especially wireless connections to the internet. That change has happened so fast and become so ubiquitous that it's hard to remember a time when mobile phones were not fully functioning miniature internet terminals. In 2001, however, telecommunications companies were just launching the first of the "fast" 3G networks that would make mobile data a practical reality. Today, more than 5 billion people subscribe to mobile services. Even in sub-Saharan Africa, the region with the lowest rates of mobile ownership, subscriber penetration rates are rapidly approaching 50%.

People aren't just buying mobile devices in their millions, they're also using them more often, and to do more with them. Traffic on the world's mobile data networks has grown at around 60% a year for much of the past decade, with much of that expansion driven by users' seemingly endless appetite for video services. Wireless equipment-maker Ericsson estimates that global mobile data use will grow from today's 38 ExaBytes (EB) per month to 160EB by 2025, with video accounting for 76% of that traffic.

The shift to online – especially mobile – services for shopping, leisure and information access has had a radical effect on many types of business. After fighting the change for many years, the music industry has almost entirely embraced downloads and streaming

>2

The number of connected  
devices for every person  
on Earth, 2019

services as its primary distribution channels. E-commerce is transforming retail, and 2019 was the first year that the global advertising industry spent more money online than in traditional media.

If humans have embraced the world of seamless connectivity with great enthusiasm, machines are catching up fast. Excluding “traditional” computers and mobile phones, researchers believe that the number of internet of things (IoT) devices exceeded the human population of the Earth in 2017. There may already be more than two connected devices for every person.

The majority of those devices today are consumer products, such as smart speakers or connected home security cameras. Internet security company Avast estimates that 40% of homes worldwide now contain IoT devices, with the figure rising to 66% in North America. Industrial applications of IoT technologies, however, are also reaching critical mass. A team of researchers from McKinsey and the World Economic Forum has been traveling the world for the last two years collecting “lighthouse” examples of manufacturing companies that have managed to create real value from the application of IoT and other advanced digital technologies. In their latest report, published in January, the group notes that the best companies are now using these techniques to manage and coordinate not just factories but whole supply chains.

Semiconductor-maker Infineon, for example, used IoT in its manufacturing operations to cut material costs by 10%, while digital connections between its factories and subcontract suppliers have halved the time required to react to quality problems and quarantine suspect material. Chemicals company Henkel has connected all its plants and distribution centers in a single cloud-based digital network, an approach that it says has helped it transform productivity,

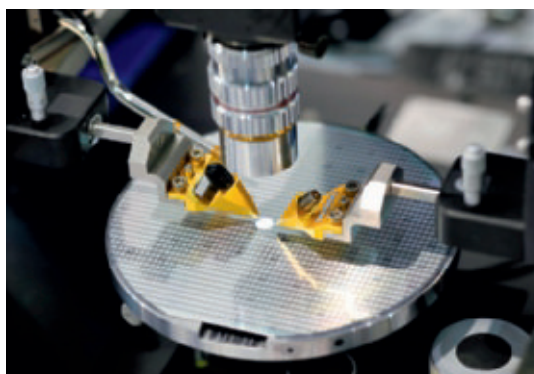
“In the coming years, I think we will see big progress, for example with new technologies that are designed to augment and support people rather than replace them.”

**Alexander Gunde, President, Global Technology Sector, DHL**

reduce energy consumption and increase forecast accuracy by a fifth.

### Doubling down on data

If connectivity really has transformed the way we live our lives and run our businesses, what are companies doing with the estimated 3,000EB of data that flows through the world’s networks every year? Humanity’s ability to manipulate and extract information from data has changed dramatically during the course of the century thus far. Faster, more powerful computers



### PRECISION INSTRUMENTS:

One semiconductor-maker uses the internet of things in its manufacturing operations.

### SHAPE OF THINGS TO COME:

It’s still unusual to see robots – such as this patrol robot – deployed in public.



x10

The growth in robots in the logistics sector 2017 to 2022

allow the processing of far larger volumes of data. The data used by the Intergovernmental Panel on Climate Change (IPCC) in its models of global warming impact has increased in size by a factor of 27,000 since 2001, for example, with the latest predictions based on around 300 PetaBytes of data.

Computers have also become much better at tasks they once struggled with, especially with the emergence of advanced analytics techniques, which can extract useful information from noisy or uncertain data, and artificial intelligence (AI) technologies that can make complex decisions and judgements. The COVID-19 crisis has made this very clear. According to Forbes, China relied on its strong technology sector as part of its response to fighting the virus. Alibaba, Baidu, Huawei and other companies accelerated their healthcare initiatives and are now involved with clinicians, academics and government entities around the world to activate technology, with AI, among other things, able to identify, track and forecast outbreaks, helping to diagnose the virus and processing health-care claims.

Technology's successes in some categories of task made many companies optimistic that they would soon find solutions to a whole range of more difficult problems. Some of those tasks have proved more stubborn than expected. In 2017, leading carmakers, including GM and Ford, announced that they would be able to sell fully autonomous, self-driving vehicles by 2020 or 2021. Both companies have since pushed their timelines back. Ford, for example, still hopes to launch a fleet of self-driving taxis in 2021, but admits they will only be able to operate in a few areas where

road and traffic conditions are favorable.

The challenge of self-driving technology comes partly from its complexity. Vehicles need to sense and understand busy, noisy and unpredictable environments, then make instant decisions based on that understanding. But the high stakes also add significantly to the challenge. Misunderstanding a driving situation, or making a bad decision, can have fatal consequences.

Today, it seems that business uses for autonomous driving technologies will progress more rapidly than their consumer counterparts. There are plenty of applications in manufacturing and logistics environments that offer the sort of well-controlled, predictable environments that computers can handle. Volvo is currently using Vera, its autonomous electric tractor unit, to move shipping containers around the port of Gothenburg in Sweden. And a third of the 400 giant haul trucks working in Rio Tinto's mining operations in Pilbara, Australia, have been retrofitted for fully autonomous operation. The company says autonomy has reduced costs per load by 15%, while not having to cater to the needs of human drivers allows each truck to operate for an additional 1,000 hours per year.

### The rise of robots

And what about the robots? Perhaps the archetypal image of the triumph of technology is a robot fulfilling a role that once required a human. Robotic vacuum cleaners, lawnmowers and other specialized machines have enjoyed steady sales growth, but the robot as general purpose domestic help remains a thing of fiction.

#### NO DRIVER REQUIRED:

An autonomous electric tractor moving shipping containers around Gothenburg in Sweden.







**CLOSE CALL:**  
Voice recognition  
technology is becoming  
increasingly sophisticated.

In fact, the 21st century has been a great one for robots thus far, but most of their successes have remained out of the public eye. According to the International Federation of Robotics, a trade body, there are now 2.7 million robots operating in the world's factories, a number that is set to rise to 4 million by 2022. China, which had almost no robots in 2000, is now the world's largest market for them.

The fastest growth area for robotics, however, is outside their traditional manufacturing roles. In 2017, the annual market for robots in logistics applications was 69,000 units. By 2022, that market is forecast to be more than 10 times larger. Medicine and agriculture, both much smaller applications in terms of units sold, are also forecast to expand rapidly, with annual unit sales growth of 40% and 50% respectively in the coming years.

In many of today's high-profile areas of innovation, the challenge is no longer the technology itself says Alexander Gunde, President of the Global Technology Sector at DHL. "In the past few years we've seen costs come down and capabilities increase. Now the biggest barrier for many companies is working out how they will integrate these innovations into their existing operations." That process often requires significant experimentation, he adds, noting that in DHL's Supply Chain division alone there are currently some 1,500 pilots in the pipeline globally, with around a third already live, in areas from robotics and wearable devices to AI-assisted planning. The most successful ideas are then rolled out to other appropriate sites.

"Technology, people and processes all have to adapt to each other," he says. "And, especially in the supply chain, that can require coordinated changes across multiple business functions and organizations. It will also require leaders who dare to take risks, pioneering the application of new technologies, new ways of working and new types of collaboration." ■

**Jonathan Ward**

## 3 QUESTIONS FOR...

### 1. New technologies often promise to change the world. Are those promises being fulfilled?

Yes, they are. Sometimes new technologies are overhyped to start with, but their long-term impact is underestimated. New ideas move so quickly from being seen as extraordinary to the point where people just expect them to be there. The mobile internet is probably the best example of that. Today, half the world has access to information, entertainment and services from a device in their pocket.

And in the current Covid-19 crisis, we see their benefit more so than ever, as, for example, AI helps to track and forecast the spread of the virus, and robots are being deployed to help with tasks such as cleaning and sterilizing.

### 2. What are the next major frontiers for technology and innovation?

In business, I believe that the biggest challenges often come not from the limitations of a particular technology, but from the complexities of implementation. It's easier to make the internet of things work inside the walls of your own factory than to do the same thing across a supply chain involving dozens of organizations, hundreds of activities and thousands of interactions, for example. It's those sorts of challenges that business and society are beginning to address today.

### 3. How does DHL see its role in a world of rapid technological change?

We want to be both a beneficiary and an enabler, especially through co-creating with customers and partners. We're always testing and piloting new solutions and evaluating new technologies in our quest to innovate. And we can help our customers to deploy, integrate and support new technologies.

Alexander Gunde,  
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# INNOVATION AT THE EDGE OF THE NETWORK

The enterprise computing market has changed radically in recent years. Now it's changing again, and field service operations must be ready to adapt.

**E**very modern business is a digital business. Whether a company sells food, consultancy services or mining equipment, it's likely to rely on computing systems and software in many parts of its operations. In recent years, many organizations have suffered from high-profile IT problems – from failed system upgrades and power outages at data centers to large-scale cyberattacks. These incidents have disrupted businesses for days or weeks, leading to high recovery costs, angry customers and even fines from regulators.

The companies that provide enterprise IT equipment – such as servers, network infrastructure and storage devices – know all too well that reliability and high availability are top priorities for their customers. Those organizations have developed sophisticated service and support operations. They employ teams of skilled field engineers ready to respond to problems at short notice, and they keep stocks of spare parts close to customer sites.

Those robust networks have enabled the technology sector to offer service levels that are the envy of many other industries, but the ability to respond

to problems within hours rather than days comes at significant – and increasing – cost.

## The jump to hyperscale

The biggest change to hit the computing market in recent years has been the increasing importance of so-called hyperscale data centers. Originally built to meet the demand for computing power created by the giant internet firms, these huge, centralized computing facilities each contain tens of thousands of individual servers. Today, a significant chunk of their capacity is rented out to third-party organizations that choose to run their business application remotely in the cloud. According to analyst Synergy Research Group, the number of hyperscale data centers worldwide passed the 500 mark in 2019, up from around 400 two years earlier.

Hyperscale data centers and cloud computing have brought significant benefits for users. Outsourcing and centralization help to bring the cost of running an IT system down, and new software and hardware techniques make it easier to share computing and storage tasks dynamically across

different computers, which boosts the utilization of each machine, cutting costs still further.

Hyperscale data center operators are powerful customers, however, with the ability to negotiate competitively with equipment manufacturers for the best possible price. A shift to fewer, larger infrastructure projects, meanwhile, has made the overall enterprise IT market more cyclical in nature. After growing strongly in 2018, for example, the server market contracted sharply last year, as a number of major customers completed a wave of development projects.

### Service scrutiny

Facing slower growth and a squeeze on margins, IT equipment makers are putting every part of their costs under renewed scrutiny. That includes the cost of the service logistics operations. According to Scott Allison, Chief Customer Officer at DHL Supply Chain, one particular area of concern is the volume and disposition of spare parts inventories.

“Technology companies have made great strides in the management of the inventories in their central and regional distribution centers,” he says. “Most now operate a global inventory management platform that allows them to track demand, see exactly what they have in each location and adjust their inventory levels to balance service and cost.”

Nevertheless, says Allison, “These companies often have lots of inventory in places where visibility is poor. That might be parts that are sitting in the offices, homes and vans of service engineers, or consignment stocks waiting at customer sites.”

That invisible inventory drives up inventory buffering and therefore costs, explains Allison. Companies may overinvest in stocks of service parts because they don’t know what is available in the field. Or they ship parts unnecessarily through their logistics networks because they don’t realize that the relevant item is already available at a location much closer to the point of use, and if service inventory isn’t consumed in a timely fashion, it quickly becomes obsolete and must be written off or sold at a loss.

### Transparency from end to end

Leading companies in the sector are now taking steps to achieve true end-to-end visibility of their service inventories. That, says Allison, has required changes to inventory management software, and to the hardware used by service engineers and customers in the field. “These companies now treat their service engineers’ homes and vehicles as additional stock locations, for example, so that inventory is visible to everyone, and they are provided with dedicated scanners or software on engineers’ personal devices that allow them to log the details of each item as they receive or install it.” At customer sites, meanwhile,

a new generation of smart lockers acts as a satellite warehouse and inventory management system, holding parts securely, logging their removal and even automatically issuing replenishment orders.

### From hyperintegration to hybrid

If the growth of centralization and cloud computing has put technology companies’ service models under one sort of pressure, the industry is now preparing itself for a swing in the other direction. There is growing realization across the industry that putting critical data and computing tasks in distant data centers isn’t always the ideal solution.

Some of the switch is being driven by privacy and security concerns, with companies keen to maintain full control over sensitive information. Changes in attitudes by regulators, meanwhile, are encouraging some companies to ensure customer data is held inside the jurisdiction where those customers reside.

In other applications, performance is becoming a critical factor. For artificial intelligence systems used in industrial control systems or to support networks of autonomous vehicles, the extra time taken to exchange information with a remote data center can be a critical drag on performance. Those applications are driving up the need for so-called edge-computing capacity, where powerful servers are located as close as possible to the point of use. And some companies are employing hybrid IT architectures, in which tasks are shared between local and remote computers according to urgency and available capacity.

“In a hybrid world, technology companies will need logistics systems that can support high service levels in a widely distributed environment, while keeping costs under tight control,” concludes Allison. “They need to ensure they are taking action now to be ready for an even more demanding future.” ■

**Jonathan Ward**

#### FIELD OF VISION:

New technology is increasing the efficiency of inventory management.







## ALL HANDS ON DECK

At the height of the COVID-19 crisis, global teams at DHL are working around the clock to safeguard supply chains for key medical products, samples and respirators across the world.

**A**rguably, the supply chain for Life Sciences and Healthcare (LSH) is always “critical.” Whether it’s a patient sample or investigative drug for clinical trials, temperature-sensitive biologics for immunization compounds or a life-saving personalized cancer drug – all need to be handled and delivered with precision and expertise, as well as often at high speed and on an “urgent need” basis.

However, at times of crisis, be it a natural disaster or an outbreak of disease, the movement of critical LSH goods supplies takes on an extraordinary level of importance. Never has this been truer than during the

management of the COVID-19 pandemic, as governments and healthcare providers around the world frantically scramble to stock up on everything from masks to respirators, consumers stockpile medication, and pharma companies consolidate and move their stock globally ahead of anticipated extra demand.

“It’s been beyond extraordinary,” admits Larry St. Onge, President of Life Sciences and Healthcare at DHL. “I’ve seen many emergency situations: the ash cloud that brought the airspace over Europe to a standstill in 2010, for example, or the aftermath of the 2017 hurricane in Puerto Rico. On both of those

occasions we had to do the seemingly impossible in order to get shipments to customers and patients. However, what we're seeing right now is really unprecedented in its scale and magnitude because the entire world needs millions of tons of medicines and vast numbers of medical devices and hospital equipment all at once."

St. Onge and his team of more than 12,000 trained DHL Life Sciences & Healthcare logistics specialists face an even tougher challenge globally because precious cargo space is included in the 75% of passenger traffic that have currently been grounded. "As customers are asking us to ship more, and at speed, and several government agencies need our help too, we are having to come up with special innovative solutions," he explains. "We have created the DHL Healthcare System, a member network of all the passionate, committed, trained employees throughout all DHL business units with one singular focus: to ensure we understand and act with the driving concept that there is a patient at the end of every order we fill and every shipment we deliver. Thanks to the strength of that system, we have been able to reserve and leverage space on our DHL Express flights, as well as managing a complicated system of dedicated charters and negotiated block space agreements through DHL Global Forwarding, to deliver urgent, life-saving drugs and equipment on behalf of our customers and, ultimately, the patients who need these treatments.

"Moreover," St. Onge adds, "we are facing border closures at times – and in places where warehouse workers have a daily commute between two countries. So DHL Supply Chain has put contingency plans in place to immediately separate shifts into day and night shift operations to lessen risk. We have even rented hotel rooms to ensure that workers who are able can stay safe and conveniently located after their shifts, and avoid having to cross a border that might be closed at any time, effectively shutting the warehouse down. Caring is a core value for us, throughout DHL.

"Our teams have been outstanding," says St. Onge. "I know we have the greatest logistics team around the world, all working with passion and purpose. Our motto is 'DHL – We care,' and we are all keenly aware that our jobs are more than just picking up orders or making deliveries. We know that every shipment matters to the health and quality of life for one or many patients and their families. With this understanding, we know every step in our process, handling and

quality control must be executed with 100% precision, accuracy and timely delivery. In a sector such as Life Sciences and Healthcare, there is no margin for error. Our continuous investment in sector-specific expertise and processes as well as in GDP- and GMP-compliant infrastructures with a global network of certified facilities allows us to respond almost immediately to the demands of the current outbreak situation. However, what our teams are doing just now is astonishing. It's all hands on deck and working around the clock to ensure that we deliver for our customers."

DHL's teams have performed remarkable feats, for example airlifting much-needed LSH goods to Northern Italy, the European epicenter of the COVID-19 pandemic, from the company's European hub in Leipzig, Germany, to operating special deliveries under a 'must have' permit to the Chinese city of Wuhan while it was under total lockdown.

At the start of the coronavirus outbreak, DHL shipped mainly from the U.S. and Europe to China, then across Asia – and now we are seeing a flow of medical goods out from China and other places in Asia. "I could not be more proud of our team," comments St. Onge. "We all move as one, and spirits are high, despite the extra workload. Meanwhile, we have received many emails and calls from our customers thanking us for a job well done, which have been particularly rewarding. This helps us keep our motivation even higher as we play our part in helping the world fight COVID-19."

"We are committed and are working tirelessly," he adds, "and we will continue to do so until this crisis is over." ■ **Michelle Bach**



**[bit.ly/DHL-LSH-sector](https://bit.ly/DHL-LSH-sector)**



**[larry.stonge@dhl.com](mailto:larry.stonge@dhl.com)**

**"We are committed and are working tirelessly, and we will continue to do so until this crisis is over."**

**Larry St. Onge, President, Life Sciences and Healthcare, DHL**

# DEMAND AND SUPPLY IN DEEP SPACE

NASA is planning a permanent return to the moon, which first means building a supply chain from Earth to a lunar outpost called Gateway.

**T**he countdown has started: NASA is preparing to blast off to the moon again, half a century since it last went there. It has fired up its Artemis program (in Greek mythology, Artemis is the twin sister of Apollo, the name of the original moon-shot project) and is planning to land the first woman and the next man on the lunar surface by 2024. This time, though, things are going to be different.

This time, NASA is planning to stay in deep space. If this sounds like another giant leap for humanity, you haven't heard anything yet, says Mark Wiese, NASA Gateway Logistics Element Manager. Ultimately, the idea is to tap into the moon's resources so that it can be used as a launchpad to Mars. "We're going to the moon to extract ice and turn it into water," he says. "We can then build technology and other capabilities on the moon's surface so that our astronauts can learn to live off the land. Essentially the moon will become a scientific proving ground and a logistical hub – a base that will allow us to further explore our solar system and propel us on to Mars." If all goes to plan on the moon, NASA hopes to reach the Red Planet in the early 2030s to replicate the success.

## New commercial frontier in space

But first things first. The initial phase of the Artemis program is the creation of a small lunar outpost called the Gateway that will orbit around the moon. This will be the size of a studio apartment and feature living quarters and laboratories for science and research. Astronauts will use it as their base,

shuttling backward and forward to the lunar surface where they will carry out research and exploration missions. The first part of the structure is already being built and will be sent into space in 2022, followed by a habitation and logistics outpost module (called HALO) in 2023, which will give the crew extra space and include docking ports for visiting supply ships. The Gateway is expected to be fully assembled in 2026.

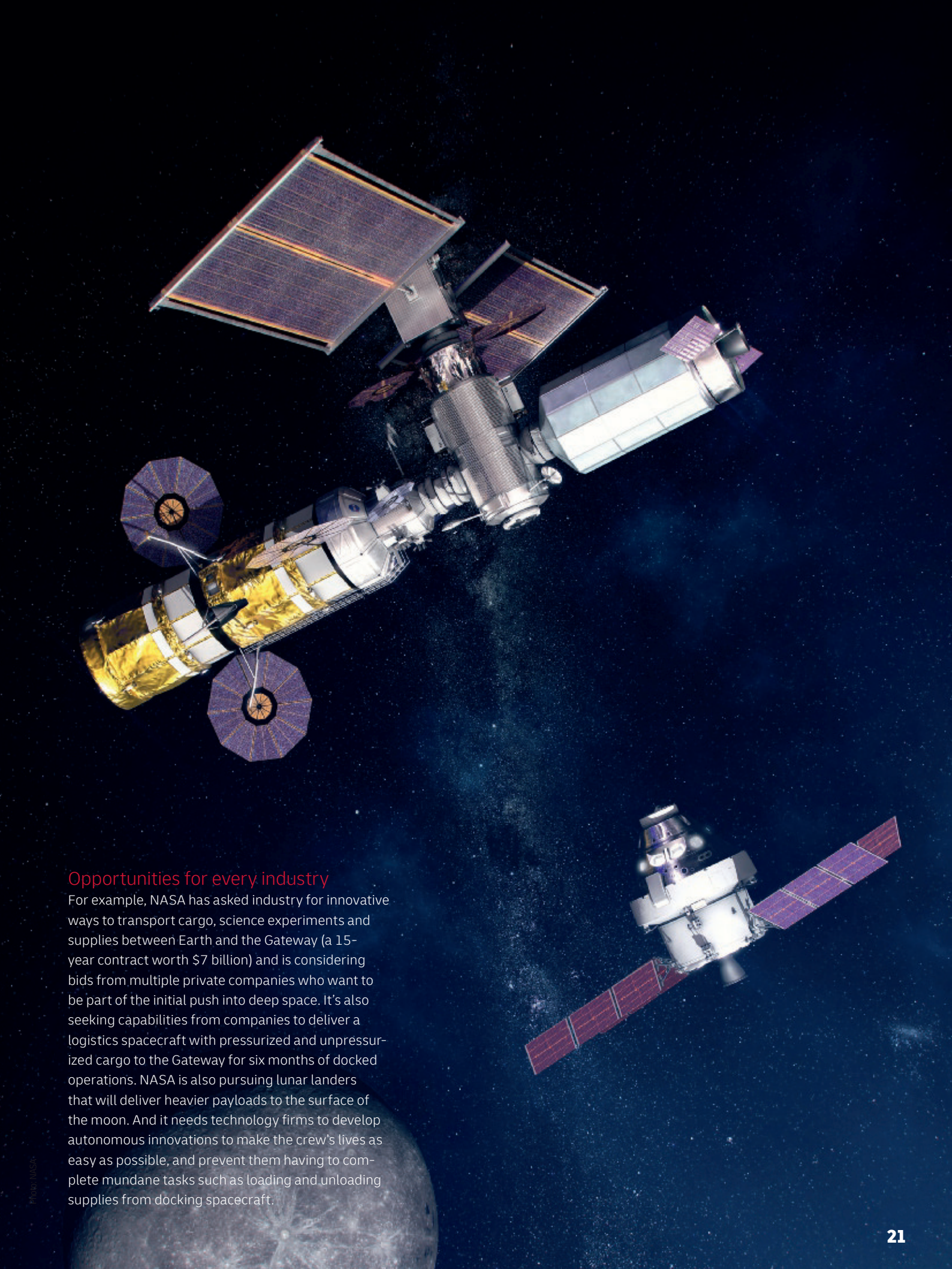
Creating a permanent presence in space means building a complex supply chain from Earth to the Gateway – and Wiese and his team are leading development. Of course, space logistics isn't a new phenomenon: Astronauts and cosmonauts on the International Space Station (ISS) receive a delivery of cargo, equipment and food around six times a year, with commercial companies Space X and Northrop Grumman performing resupply missions for NASA.

But the Gateway presents an entirely new commercial frontier in space. To begin with, this will be a deep space supply chain operation. To put it in context, the International Space Station flies in low orbit just 250 miles (400 kilometers) above Earth, whereas the Gateway will operate around 250,000 miles (400,000 kilometers) from Earth. With this greater distance, however, comes greater commercial opportunity. Companies will be working with NASA to supply astronauts with everything they need to live and work on the Gateway; but they will also be able to deliver other elements of crucial lunar architecture as the mission develops and capabilities start to be built on the moon's surface.

**\$7  
BILLION**

The value of the contract to transport cargo and supplies between Earth and the Gateway





### Opportunities for every industry

For example, NASA has asked industry for innovative ways to transport cargo, science experiments and supplies between Earth and the Gateway (a 15-year contract worth \$7 billion) and is considering bids from multiple private companies who want to be part of the initial push into deep space. It's also seeking capabilities from companies to deliver a logistics spacecraft with pressurized and unpressurized cargo to the Gateway for six months of docked operations. NASA is also pursuing lunar landers that will deliver heavier payloads to the surface of the moon. And it needs technology firms to develop autonomous innovations to make the crew's lives as easy as possible, and prevent them having to complete mundane tasks such as loading and unloading supplies from docking spacecraft.



## Purpose and opportunity

Supply and demand opportunities on the Gateway might be met in a different way if the 3D printing of essential items in deep space turns out to be a possibility (much like NASA has done in low orbit on the International Space Station). In future, astronauts might even be able to use 3D printing to make the architecture they will need to live and work on the surface of habitable planets. "The Artemis program offers expanding opportunities across all types of industries," says Wiese. "By taking advantage of these, companies will be able to help push our economy all the way out to the moon."

There is a real-world purpose to this deep space adventure, notes Wiese, who points out that the advances made during the Artemis program could help drive innovations on Earth – and that includes

# 5

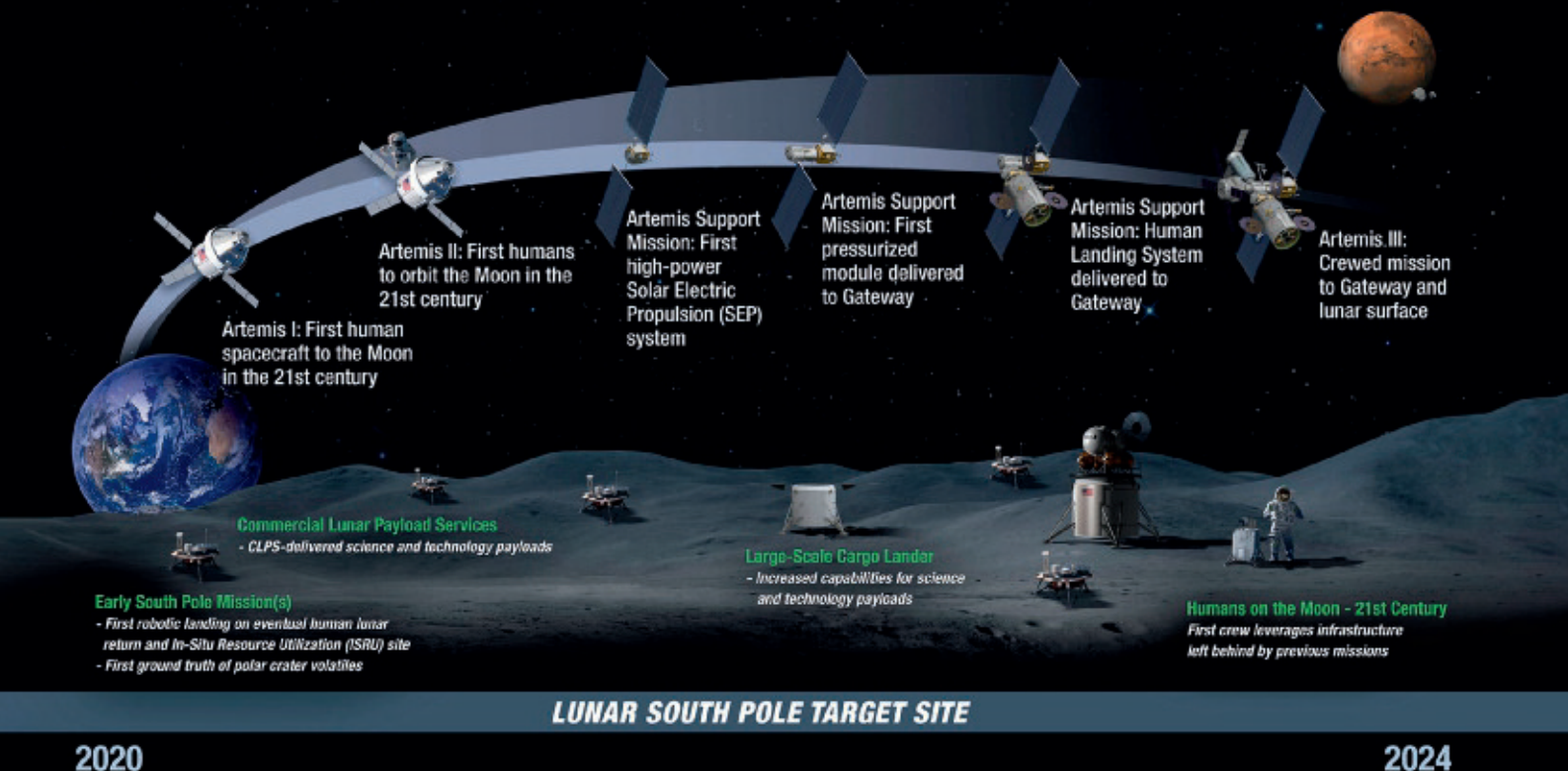
The number of days it will take astronauts to commute from Earth to the moon

the logistics industry. "For the last 50 years, we haven't been able to speed up delivery of cargo from, say, the U.S. to Europe," he says. "It still takes a big cargo aircraft and a certain amount of hours to get across the Atlantic. But, as our capabilities increase and as we push down the cost of rocket technology and reusability, we envision a day where we'll say to a courier: 'I need to get this package on the next rocket launch,' so that it can get from Florida to its destination in the U.K. in hours and minutes, instead of days. It's another reason why we need industry to come with us on this journey into space. We are going." ■ **Tony Greenway**

Don't miss the interview with Gateway Logistics Manager Mark Wiese on page 30



[www.nasa.gov/specials/artemis/](http://www.nasa.gov/specials/artemis/)



# EVERY THING CONNECTED

The first generations of wireless technology helped billions of people to communicate. The next will help billions of things to do so too.

**W**here next for wireless? The arrival of 5G, to huge public interest, has put this question at the forefront for businesses.

A new white paper from DHL Trend Research is set to deliver some answers.

The report “Next-Generation Wireless in Logistics” has a threefold purpose: to explain what’s happening in the newest generation of wireless technologies; to examine how it applies to logistics; and to form a picture of how it could transform the industry in future.

It has taken the internet and more recently wireless technology just 20 years to become a seemingly indispensable element of human society. But while its story so far has been mostly about social media, telecommunication and mobile apps facilitating more elegant connections between people, the focus in the near future will be on connections between things. There are 3.5 billion smartphones in the world, yet most machinery still remains offline, indicating that the potential of the internet of things is only just beginning to be explored. As Ben Gesing, one of the report’s authors says: “Connecting all the things in the world is one of humanity’s next big endeavors.”

Alongside the continued evolution of established wireless technologies, the coming years will see new high-coverage, low-power networks extend

their reach to the remotest regions, such as oceans and deserts – an expansion assisted by independent companies setting up their own cellular infrastructure, as with LoRa and Sigfox.

In logistics, meanwhile, changes will include the ongoing shift away from RFID tagging in favor of the wireless NFC-based sensors found in smartphones.

Bluetooth sensor networks, too, can now be used in checking shipments, so that large pallets (of valuable medical equipment or pharmaceuticals, for example) can be precision-tracked down to box level. Using a mother sensor communicating with Bluetooth beacons on each box, logistics operators can monitor the condition of each box and be alerted if the pallet is broken down, mitigating the risk of lost items.

Wi-Fi 6, meanwhile, will double the number of wireless channels available to four, allowing the two new frequencies (1GHz and 6GHz) to be reserved for particular equipment and machinery, freeing up congestion for personal device and telecommunications traffic.

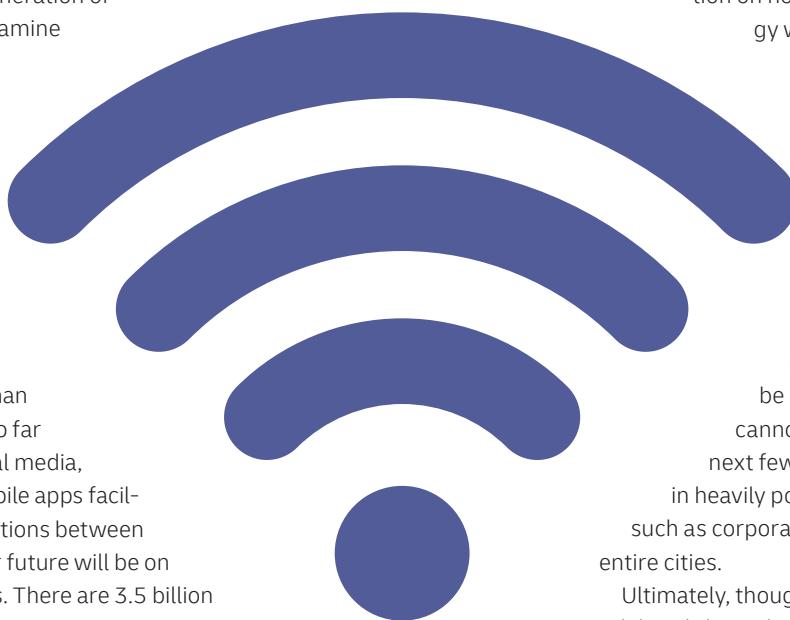
And better Wi-Fi will also mean more robust fleets of robots increasingly being used in logistics.

The trend report includes a specialized section on how the latest wireless technology works, highlights some innovative projects underway in the industry, and provides implementation guidelines for supply chain organizations.

There will be plenty, too, about the superfast 5G, the main drawback of which is that it requires dense infrastructure to be in place globally, a process that cannot easily be accelerated. For the next few years, 5G is likely to blossom in heavily populated, well-equipped areas, such as corporate campuses rather than in entire cities.

Ultimately, though, 5G will be a crucial enabler of such breakthrough technology as autonomous vehicles that can communicate with each other. Already it is changing the technological landscape, with every hardware manufacturer considering 5G-ready devices and components.

Expect exponential change. ■ **GP Newington**





# ALL TO PLAY FOR

Even before the widespread lockdown due to the coronavirus, online gaming had billions of users worldwide. Now this form of entertainment has literally gone viral. How can businesses serve this huge market and step up to its opportunities?

In the vigorous battle for the world's attention, the main player in the game is, increasingly, gaming itself. This entertainment phenomenon acts as social network, creative playground, competitive arena, spectator sport and audiovisual treat – often all rolled into one. Today's most popular online games, such as Minecraft and Fortnite, and platforms such as Roblox, offer a mix of pleasures that other media can't match.

And with the lockdown necessitated by the spread of the new coronavirus, even more people are logging in to play away the long hours spent indoors. According to the "Economist," amid the COVID-19 crisis, traffic in video games has gone up by some 75% in the U.S. alone since restrictions were introduced.

Now mainly free to play, this generation of digital hangouts has already redefined the entertainment

## \$150 BILLION

The value of gaming  
worldwide

market. Hardly an old-stager itself, Netflix summed up the changing power balance in its 2018 earnings report, stating: "We compete with (and lose to) Fortnite more than HBO."

In the past decade, "The mobile revolution has created the biggest market for gaming that has ever existed," says Tokyo-based game-industry consultant Serkan Toto of Kantan Games. Gaming studios that were unknown a few years ago "literally reach billions of people worldwide today."

Yet, adds Toto, until recently, "Gaming has been a widely ignored field by businesses, despite being a \$150 billion concern worldwide ... The vast majority of companies are either very slow or reluctant when it comes to learning about the games market and what kind of opportunities it can hold for them."

### Gaming's expanding demographic

It's a long time now since the early days of gaming in the 1980s and 1990s, when it was seen as a niche interest – mainly for young males of limited spending power. Business diffidence then was understandable. Not so now, when technology has been radically transformed, along with gaming's demographic. Many of that original generation of millennial gamers are now middle-aged "über-consumers," enthusiastic buyers of high-end products, and parents of children even more tech-savvy than themselves. Surveys have shown, too, that an increasing proportion of gamers, perhaps as many as one in three, are now women.



But although businesses must find a way to engage with this rapidly expanding market, it may not be enough to do so simply through traditional models of advertising or sponsorship. To build a relationship with gaming, companies also need to find a way to be part of the stories it tells and the sense of community it can create.

The stated mission, for example, of Roblox – an innovative digital space where users create, develop, share and sometimes profit from an ever-increasing multitude of their own games – is “to bring the world together through play.” This free-to-play platform, which has increased its number of users to more than 100 million in recent years, comes complete with its own currency (dovetailing with real money) and game-related items created by users, such as models, audio and clothing, which can be advertised and bought as in-app purchases. In a quick reaction to the corona crisis, Roblox has also introduced a set of free Roblox Education initiatives to help students learn remotely, including webinars for teachers and how-to guides for kids to make a game on the site. They have also posted advice on how to host a “Roblox birthday party,” complete with video-conference invitation and – of course – games.

An effective way forward for companies may be simply to create their own games. This is an approach now favored by Netflix, which launched the Stranger Things 3 game to coincide with the latest season of the TV series, and by KFC, whose new dating game (featuring a youthful Colonel Sanders) recently went viral in the U.S.

This interactivity is a means for brands to bring gamers, already familiar with virtual and augmented reality, into spaces that also function as virtual showrooms for their products. Even luxury brands now use mobile games to engage with customers, as Hermès did in 2018 with its H-pitchhh, inspired by the company’s equestrian heritage.

## Thrilling new identities in the virtual world

Will Bedingfield, a lifelong gamer and regular contributor to Wired magazine, has evocatively described in his articles how virtual environments can become part of a person’s identity. As a child, he writes, video games “were the space where I banished, at least temporarily, the chaos my learning difficulty wrought on my school and social life ... where I felt effective.” It’s a sensation gaming still gives him.

Although many of its competitions are currently on hold during the corona crisis, esports are a further dimension for gaming, and another creative



## IMMERSIVE

### EXPERIENCE:

Brands can show their products to gamers in virtual showrooms.

challenge for businesses. The multiplayer leagues and professional tournaments organized by the likes of ESL (the world’s largest esports company) attract hundreds of millions of viewers through online streaming platforms, as well as huge crowds at live events across the globe.

An opportunity for straightforward sponsorship deals, as in Red Bull’s partnership with Riot Games for the latter’s League of Legends tournaments, esports can also involve a more embedded role for brands. In May 2018, DHL announced its partnership with the ESL One series, handling shipping and logistics for tournaments on several continents. As a further element of this arrangement, the DHL-branded vehicle EffiBOT now features as an undaunted in-game courier in the Dota 2 game – a character who has proved so popular that, when DHL’s logo appeared on the big screen at ESL One Birmingham in 2018, the crowd started cheering. It was a response that lived up to the declared aim of Arjan Sissing, Head of Corporate Brand Marketing at DPDHL, to “create unique moments that bring people together” and to connect brand with audience “on an emotional level.”

For companies looking to link with gaming, perhaps this shared storytelling and ongoing identification is key. But, whichever way they go about it, businesses now “are essentially guaranteed to tap more aggressively into games and esports,” says Serkan Toto. “The reason is very simple: scale. Gaming as a business has ballooned, and no other media offers this kind of reach.” ■ **GP Newington**

**100**  
**MILLION+**

The number of gamers worldwide



## FIRST AID BOX

**C**arlo Ratti, Professor of Urban Technologies & Planning at MIT, joined forces with an international team of designers, engineers, medical professionals and military experts to work on CURA, an open-source project aimed at capacity building in intensive care units (ICU). CURA, whose name stands for Connected Units for Respiratory Ailments (and also “cure” in Latin), uses repurposed shipping containers to create plug-in biocontainment pods that can be quickly deployed in cities around the world, promptly responding to the shortage of ICU space in hospitals and the spread of the disease.

The compact ICU pod for patients with respiratory infections is hosted in a 20-foot intermodal container with biocontainment (thanks to negative pressure). The prototype strives to be as fast to mount as a hospital tent, but as safe to work in as a hospital’s isolation ward. Each unit works autonomously and can be shipped any-





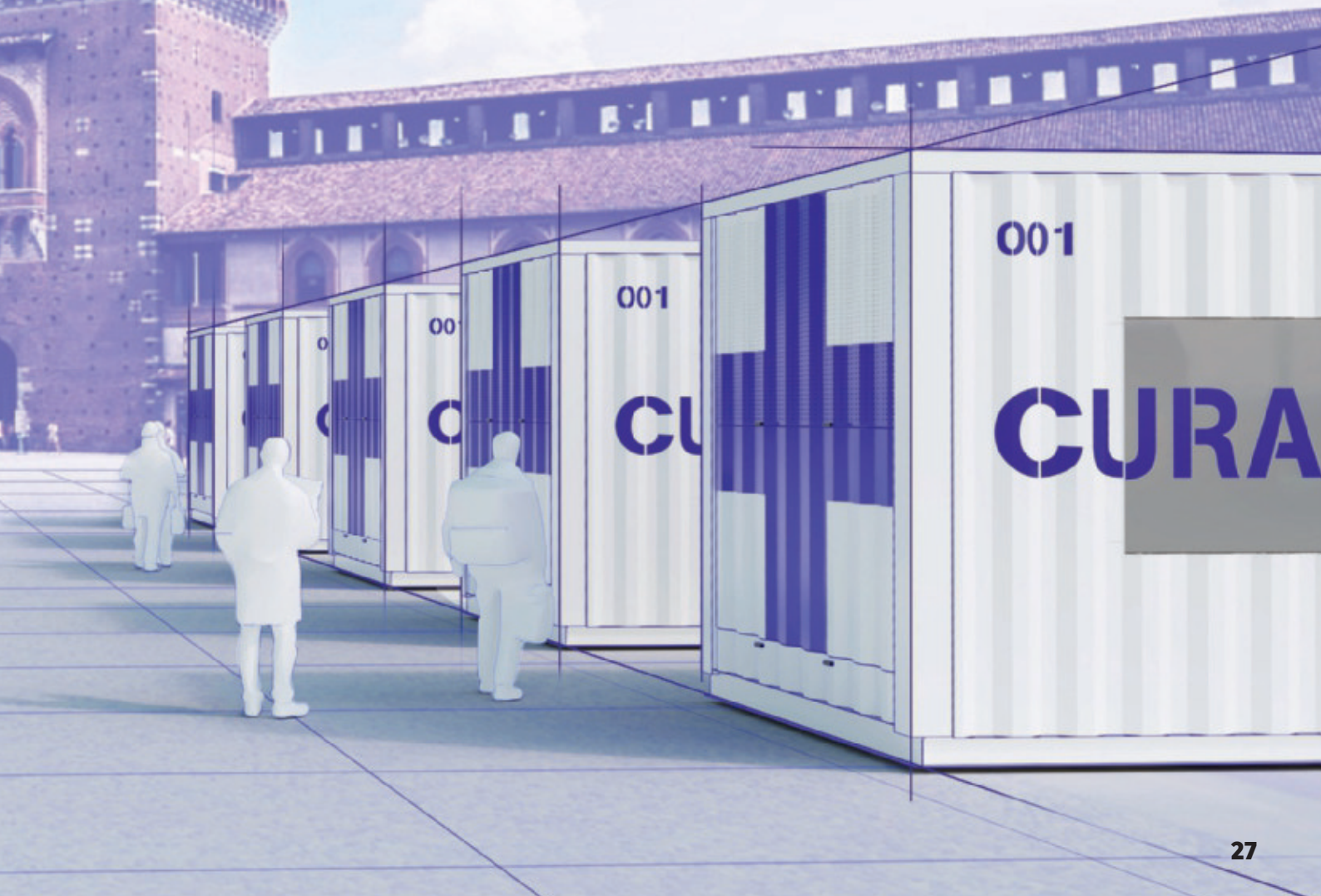
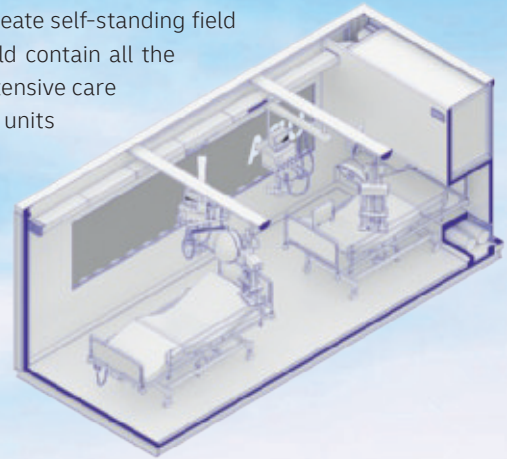
where. Individual pods are connected by an inflatable structure to create multiple modular configurations (from 4 beds to over 40) that can be deployed in just a few hours. Some pods can be placed in proximity to a hospital (e.g. in parking lots) to expand its ICU capacity, while others could be used to create self-standing field hospitals of varying sizes. Each CURA pod would contain all the medical equipment needed for two COVID-19 intensive care patients – including ventilators and IV stands. All units can be connected by an inflatable corridor. ■



[www.carloratti.com/project/cura/](http://www.carloratti.com/project/cura/)



[www.curapods.org](http://www.curapods.org)



# THE NEW NINE TO FIVE

The office – as a place and even as an idea – is going through a radical overhaul, fueled by developments in technology, innovative design and changing attitudes to work. We look at some of the transformations that are already taking place – and at what the future might hold.

Until recently, the future of the office involved all sorts of groundbreaking ideas for work environments to facilitate social interaction that inspired creativity and productivity. The corona crisis has, however temporarily, created a void in those spaces as we find the necessity of social distancing thrust upon us all. As the crisis changes our thinking and perception of the world, our office environments will be transformed yet again.

Even before COVID-19 started taking its toll on the world, a quiet revolution had begun at the office, transforming both the traditional office space and the way we use it – supposing we still use it at all.

With more employees working flexible hours rather than the traditional nine to five and spending some or all of their working hours at home or in a co-working space, the question arises as to whether there is a future for the office as we know it – especially once we return to a state of normalcy.

Ever-increasing broadband connectivity, cloud data storage and the advent of Skype and other teleconferencing tools make it much more feasible to work from home – or from anywhere. Add to this the high cost of living in major cities, and some people now opt to live and work in rural areas, taking meetings via apps such as Skype or GoToMeeting and only traveling to the city office when absolutely necessary.

For many companies, this versatility seems to be paying off. A 2018 survey by the Institute of Leadership and Management found that 65% of managers in the U.K. feel that flexible working enhances commitment and motivation, while 82% believe it improves productivity. Other studies have produced similar findings. Now, hundreds of millions of people have no choice but to manage from home. The impact that will have remains to be seen. Will they want to embrace their new-found freedom from commutes, or will many miss engaging with co-workers, face-to-face meetings – and perhaps even the food easily available from the office canteen?

## The value of social interaction

The traditional office has been changing; therefore, many may find it an attractive space to return

to. The increase in the number of freelancers and small business startups, for example, has resulted in co-working spaces becoming a significant part of the contemporary working world.

Alison Hackett, founder of publishers 21st Century Renaissance, based in Dublin, found that a co-working space in the city center was perfect for her needs when she started her business. “While it’s wonderful, setting up your own business can also be a lonely experience,” says Hackett. “And I liked the idea of going into an actual workplace, like everybody else, and having colleagues to chat to.”

The space also provided some of its members with unexpected opportunities. “Because there was an emphasis on creativity, some really interesting collaborations happened as a result of having, say, a designer working at one desk and an architect three desks up who needed something designed.”

But, as attractive as co-working spaces can be, for most people, particularly in larger organizations, going to the main office has still been the major part of their working life.

Dr. Peggie Rothe, development director at U.K.-based Leesman consultants, believes there will always be a role for the company office. “I definitely see that there are all these flexible options, like co-working spaces and so forth that are complementing what organizations have,” says Rothe, “but I don’t see large organizations working toward a structure where they wouldn’t even have an office. We need to have a place where we can gather, where we can build our sense of community and meet our colleagues, and so forth.”

Leesman’s research supports Rothe’s observation. In their survey of more than 600,000 respondents, 92% said they predominantly work at the main office, only rarely or occasionally working anywhere else.

## Brighter, busier, more diversified

But even for that majority who do still work at the office and will likely return there, things are quickly being transformed. Both co-working spaces and corporate offices are being designed in more interesting ways, including brighter decor and various kinds of working areas that foster creative interaction

65

The percentage of managers in the U.K. who feel that flexible working helps commitment and motivation; 82% believe it improves productivity





and the meeting of minds. In this environment- and health-conscious era, the idea of bringing nature indoors with floor-to-ceiling glass for light, large plants or so-called green walls and water features has become popular. There is an emphasis, too, on adapting to the cultures of different countries.

In Sweden, for example, the WeWork workspaces have large, communal lunch tables, while those in the U.K. have smaller eating areas, as people there tend to eat in isolation.

"I think we have now realized that we do different things during our work day," says Rothe, "and so even if we may do some individual, focused work, we also attend meetings, we attend virtual meetings, we speak on the phone, we may need to do some deep-dive reading, or collaborate with our colleagues, and so forth, and so the office of the future is one designed to support all the different things that people do."

And it will likely be a more welcoming sort of place, taking inspiration from the neo-hippie ethos of Silicon Valley. In Google's Mountain View headquarters in California, fresh organic food and barista coffee is constantly available, and there are fitness and wellness centers, group cooking classes and even a bowling alley.

But perhaps the most revolutionary office of all is The Edge, the 40,000-square-meter Deloitte

# 50

The percentage of workers in the U.S. who will be freelance by 2027

company headquarters in Amsterdam, described as "the greenest, most intelligent building in the world." In the building, which generates more electricity than it uses, employees have no fixed workspaces and can set their individual climate and lighting preferences via an app.

Employees today want and anticipate flexibility in their work – and more and more they expect their office to be a well-designed, healthy – and ecologically sustainable – place.

"That's actually one of the trends we see," says Rothe, "that the workplace is increasingly being seen as worth investing in, that you need to see it as an asset, rather than just a cost that you want to dial down."

With the corona crisis, however, more employees than ever before have been working from home. It remains to be seen if, post-crisis, people may prefer the flexibility that working from home provides, and what changes it will bring to working relationships and environments.

"We'll probably never be the same again," Jennifer Christie, Twitter's head of human resources, told news website BuzzFeed. "People who were reticent to work remotely will find that they really thrive that way. Managers who didn't think they could manage teams that were remote will have a different perspective. I do think we won't go back." ■

**Cathy Dillon**



# VIEWPOINTS



*Delivered.* prepares for blastoff with...

# MARK WIESE

## The Logistics Manager for NASA's Gateway Program talks about his role in getting astronauts to Mars – and why he's always believed in reaching for the stars.

**M**ark Wiese credits Tom Cruise – or rather the 1986 Tom Cruise blockbuster “Top Gun” – for inspiring his career at NASA. “I was so thrilled by that movie!” says Wiese, who admits he’s excited to see the sequel this summer. “I love high technology and pushing the envelope to find out what’s really possible. I also love watching aircraft going extremely fast. At high school I had an aptitude for math and science, and was told I should consider a career in engineering. So, encouraged by “Top Gun,” I chose a degree in aerospace engineering.”

After graduation, he took a class in small satellite design at the Kennedy Space Center in Florida, which helped him land his first job at NASA's Johnson Space Center in Houston. It was, he says – with a large dollop of understatement – an amazing opportunity. “There I was: a young engineer working in Mission Control just as NASA was sending the first crew to the International Space Station. It was mind-blowing to be a part of that. My grandparents had talked about watching the first man land on the moon, so it really resonated with them to know their grandson was working for NASA. It resonated with me, too! I remember thinking: ‘Wow! I’m in a special place.’”

Wiese has spent the last 17 years living his NASA dream. His career highlights include planning, organizing and directing activities to influence the safe and successful launch operations for the final 20 Space Shuttle missions, and working on the Atlas V program – the rockets that launched the Mars Reconnaissance Orbiter and the Pluto New Horizons space probe. Currently he’s involved in NASA’s Artemis lunar exploration program, overseeing the design, development, testing and evaluation of spacecraft along with the program’s integration of commercial logistics missions to the Gateway (see page 20). This is a small spacecraft that will give astronauts continuous access to the surface of the moon so they can mine its resources and use the lunar surface as a launchpad to Mars.

“Mars is in our sights,” confirms Wiese. “But right now we are laser-focused on landing the first woman on the moon in 2024. That will be an incredible moment. It’s so neat to see my seven-year-old daughter get inspired when I show her videos of Christina Koch (the pioneering astronaut who was on the International Space Station for 328 days). That’s what we want to do with Artemis: get another

generation inspired about the possibilities of space exploration.”

### How does it feel to have been part of the final Space Shuttle missions?

I feel extremely proud. I remember being aware of the Space Shuttle in elementary school. Space Shuttle Atlantis (the last Space Shuttle to fly) is on display here at our visitor center in Florida, and when I have the opportunity to see it with my family ... wow, I’m getting emotional just thinking about it. The Space Shuttle was a moment of pride for my country, but also for the world.

### Was Atlas V another career high?

That was also pretty special! Atlas V represented the next generation of rockets and I thought that was incredibly exciting. I was young and maybe not so cautious, so when my boss asked what I wanted to work on, I raised my hand and said: “Atlas V – because everyone thinks it’s going to be really hard!” I think that’s how I was raised: to take the more challenging path.

### How stressful is it in Mission Control at launch time?

It’s funny, but in those moments I’m in high gear and it feels as though everything has slowed down. I don’t feel stressed. To use a sports analogy: As an athlete, you can get really nervous in the lead up to a game. But when you’re in the game you have to get into a Zen-like state and employ all of your training and experience. It’s “show time” and the chance to inspire the world and the next generation of kids.

### If there’s an issue during a launch or a flight how do you respond to it?

NASA does a lot of training to make sure we have a rigorous method for working through a problem. That practice really pays off when real issues occur. Safety is paramount in everything we do. Yes, there’s a lot of money on the line when we’re dealing with an unmanned exploration satellite; but if there’s a mission with a crew involved then – oh, my gosh – those are our brothers and sisters and we have to do everything we can to make sure they’re as safe as possible.

### How likely is it that humans will visit Mars?

That’s what NASA’s Artemis mission is all about: By using the moon as a base we’ll be able to travel further into our solar system and maintain our presence in space. Basically, the moon will become our logistical hub, which makes going to Mars in the 2030s very realistic. That’s so exciting! ■ **Tony Greenway**

# 135

The number of missions the Space Shuttle flew in its 30 years of service

# ALTRUISM IS GOOD FOR BUSINESS



## ISAAC GETZ

Formerly at Cornell and Stanford universities, Isaac Getz is currently a professor at the ESCP Europe Business School. He has written on topics such as leadership, freedom and responsibility culture and the altruistic corporation. He co-authored *L'entreprise altruiste* and the award-winning bestseller *Freedom, Inc.* FNEGE ranked him in fourth place in its list of the 50 most influential living management thinkers in the world, and Thinkers50 shortlisted his work on the altruistic corporation for its 2019 Breakthrough Idea Award.



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**D**espite all the benefits that capitalism has brought to society, we have reached the moment when its downsides – social and environmental – have begun to outweigh its positive effects.

Attempts to eliminate the negative social effects of business started as far back as the 1800s. Nevertheless, the dominant corporate attitude has always been the pursuit of financial value, either unconstrained – leaving social concerns to philanthropy – or, more recently, constrained by the simultaneous pursuit of the social value, through such approaches as corporate social

responsibility (CSR), bottom-of-the-pyramid ventures or even movements like B Corporations or “conscious capitalism.”

These approaches do create certain social value, but this creation is constrained by the pursuit of profit. In sum, creating social value is considered OK as long as it does not harm your bottom line.

So why has a large Japanese pharmaceutical company, Eisai, delivered 2.2 billion tablets of its drug against elephantiasis, a painful and profoundly disfiguring disease threatening 886 million people in 52 countries, to the World Health Organization for free?



Why has LSDH, a leading French milk and juice packer, created a little lodge next to its main entrance to provide shelter and showers to outside drivers while they wait long hours for their trucks to be loaded? Why does FruitGuys, an American fruit delivery company, agree to buy all of a supplier's pears, even when they don't reach quality standards, because of an accident in his orchard?

### Pursuit of social value

These practices may seem bizarre – indeed, altruistic – for capitalistic businesses, but there's more. First, these and other companies we've studied don't limit their altruism to one or just a few actions of that kind per year. They do it all the time. In fact, they strive to transform all their business activities to create social value. Second, by unconditionally pursuing social value as best as they possibly can, they outperform their traditional competitors who are only focused on financial results.

The explanation of this apparent paradox is provided by the obliquity principle, coined by the British economist John Kay. Indeed, many individuals and organizations enjoy positive outcomes such as happiness, fame or wealth by not pursuing them. Instead, they obtain them in an oblique way by pursuing something else, like mastering a craft to perfection. The altruistic corporations do just that: They focus unconditionally on social value creation and, as a consequence, succeed economically.

Hence Handelsbanken, a leading Swedish bank, thinks of its bank advisers as family doctors taking care of their customers' (financial) health and more. These customers probably don't have the cell phone numbers of their doctors, yet they have the ones of their bank advisers and can use them even during the weekend. And just like doctors' first oath is "do no harm," so Handelsbanken's advisers will not practise cross-selling or promote in-house products if they are not the best on the market or are unsuitable for that particular client. And like doctors, the bank does not advertise its services.

By doing all that and more for 47 years now, Handelsbanken has outperformed its competition in profitability every single year. Moreover, according to a study based on data collected by London Business School on the share value of tens of thousands of listed companies since 1900, Handelsbanken's share value has multiplied by 1.9 million, the world's highest increase in value over this period. When we asked one of the bank's executive to comment on these outstanding results, he just said that they are "simply the

consequence of our culture and our value-based organizational system focusing on the customer."

Then there's the aforementioned Eisai – a publicly traded company – which doesn't think its purpose consists of manufacturing and selling drugs in order to maximize profits. Instead, Eisai conceives its purpose as relieving the suffering of patients and their families. Eisai not only thinks differently than other pharmaceutical companies, it acts differently too: It asked its shareholder assembly to vote on altering its corporate bylaws to change its stated purpose from profit maximization to this social mission, and 75% voted yes.

It has also transformed itself so that each of its business activities pursues this social purpose rather than the economic one. Paradoxically – or rather, naturally – this has led to outstanding economic performance too; the company grew organically from ranking among the world's 30 largest pharmaceutical companies to being one of its 20 largest. We say naturally because Eisai's bylaws state that if the company does its best to pursue its social purpose, it will prosper. And it does.

### Have you read?

Handelsbanken and Eisai are not alone. Through a five-year research project we have identified several dozen companies that are redefining the whole concept of the capitalistic firm. We call them altruistic corporations. In a nutshell, this term refers to a company in which most activities serve its outside counterparts unconditionally and which – thanks to this radical orientation – thrives economically. Be it customers, suppliers, the local community, the older generation who developed its know-how, the local youth or its shareholders, the altruistic corporation organizes its business activities in order to serve its stakeholders unconditionally.

In other words, the altruistic corporation places the pursuit of social value at the heart of its business rather than viewing it as a side program or equal to its pursuit of economic value.

There's an old saying: "Take care of your customers, and the customers will take care of your business." With the dozens of companies we've studied, we can safely say: "Take care of others – the counterparts of your company – and they will take care of your business." True, a leap of faith is needed in order for a business leader to choose such a business philosophy. But as the French poet and politician Victor Hugo said: "Utopia is tomorrow's reality." ■

# TEACHING VITAL LESSONS ABOUT THE WORLD OF WORK

Deutsche Post DHL Group's (DPDHL) GoTeach program – which improves the employability of young people – is 10 years old and active in 50 countries. It began life as a small initiative in Madagascar, started by Faneva Raharimanantsoa.

**T**he people of Madagascar are young – more than half the population is under 25. The problem is that schooling is not free and the country is poor. The average salary is around €100 per month, so money is often spent on food, not education. As a result, only around 35% of children go to primary school, and the numbers fall even further when it comes to high school and university. That lack of educational opportunity has caused high unemployment rates.

I've always been a passionate believer that education is key to success and a way out of poverty. If we share our knowledge, everyone wins. In 2009, I was working as a coordinator of fundraising, communication and sponsorship for SOS Children's Villages, a global child care organization that gives vulnerable

children who have lost their parents a home and a family with a dedicated carer. We had the idea of setting up a mentoring program for these young people, so I approached DHL Madagascar and asked for their support. They were happy to help and, shortly afterward, both organizations announced a formal partnership.

Their first activity was inviting 15 young people from SOS Children's Villages to DHL's offices for two hours a week to learn a range of skills and so improve their employability. Their teachers were all volunteers from DHL, and every single colleague wanted to get involved.

This was the start of GoTeach – a partnership between DHL, SOS Children's Villages and educational network Teach For All.

It developed into a program designed to help young people between the ages of 15 and 25 transition into the world of work with internships, facility visits and training. DPDHL has since rolled out GoTeach to almost 50 countries, and it's great to see the difference it's made. For instance, one of the participants of that very first mentoring activity in Madagascar was recruited by DHL and is now technical materials manager of a DHL warehousing project. Another beneficiary of GoTeach is currently Communications Officer at a big communications agency.

I left SOS Children's Villages in 2016, but I didn't leave the program behind. In fact, since 2017, I've been working at DHL as a regional program manager for GoTeach. I'm so proud that, thanks to some amazing teamwork, a small initiative has grown into a big international success story. ■ **As told to Tony Greenway**

 [bit.ly/dhlGoTeach](https://bit.ly/dhlGoTeach)



**FACT:** Local ownership is a unique feature of GoTeach. In every country, SOS Children's Villages and DPDHL staff tailor activities to the specific needs of their young people

**3000+**  
The number of young people GoTeach has reached worldwide

**1500+**  
The number of DHL volunteers engaged with GoTeach worldwide



A man, likely a DHL employee, is the central figure. He is wearing a black long-sleeved shirt under a bright yellow-green high-visibility safety vest with reflective silver stripes. He is also wearing grey work gloves. In his gloved right hand, he holds a black walkie-talkie. A yellow lanyard with a DHL ID badge and keys hangs from his neck. He is smiling slightly at the camera. The background is a blurred view of a DHL aircraft, showing its distinctive yellow and red stripes, and a white cargo door. The overall scene is set outdoors, possibly at an airport or a large logistics hub.

# 550,000

The approximate number of Deutsche Post DHL employees working in 220 countries and territories to deliver for Customers, making sure supply chains stay robust and the world keeps moving amid the COVID-19 crisis. We salute you!



# THANK YOU

To our Customers:

From everyone at Deutsche Post DHL Group and DHL – we thank you for the key roles many of you play in ensuring critical supplies are being produced, as the world needs them to sustain life amid the COVID-19 pandemic.

We endeavor to stand by your side, working hand in hand to do all we can to deliver and keep the world moving at this critical time.

AS ONE!