

| Wimbledon courts fans | Edge & 5G | Saving Sweden's potatoes | Neurodiverse employees | Autos in 2030 |



Contents

Industrious, Issue 7

From the editors	pg.03
Swiss bank digital transformation	pg.04
Wimbledon’s content chief	pg.12
Swedish drone potatoes	pg.18
Influencer: Chieko Asakawa	pg.26
Supply chains for global health	pg.28
When neurodiversity works	pg.34
Auto industry in 2030	pg.40
Influencer: Samsung’s Suk-Jea Hahn	pg.46
Big Thinker: Asma Shabab	pg.52
Stockholm traffic congestion	pg.58
Groupama’s IoT insurance	pg.68
Influencer: Rob High	pg.76
Cerealto Siro AI snacks	pg.82
Influencer: Alec Ross	pg.86
Disrupting human trafficking	pg.90
Cyber security in the age of OT	pg.98
The cost of water	pg.104
Quick takes	pg.110

Publishers:
Sharon T. Driscoll,
CMO Industry Marketing & VP
Sales Enablement

George Hammer,
Chief Content Officer

Guest editor:
Juan Zufiria, Senior Vice President,
Global Technology Services, IBM

Editor-in-chief:
Michael Todd Cohen

Editorial lead:
Justine Jablonska

Design lead:
Sebastian Huynh

Content team:
Matt A.V. Chaban, Cynthia Cunliff,
John Kultgen, Ryan Sedmak,
Marshall Wright

Design:
Sheila Cannon, Khaly Ketoure

Guest contributors:
Pam Cobb, Dayna Sargen,
Kapil Sarin, Karam Singh Sethi,
Benjamin T. Stanley

Digital:
Catalina Bradatan, Bogdan Niculi

Social media:
Claudia Maseo, Arzi Rachman,
Mary Ann Rementilla,
Kelsey O’Neill

For more industry stories:
ibm.com/blogs/industries

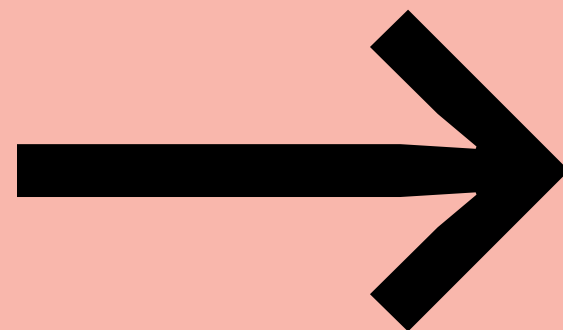
Follow IBM Industries:
[@IBMIndustries](https://twitter.com/IBMIndustries)

Want to write for Industrious?
Send us an article, idea or tip:
edstaff@us.ibm.com

In an age of exponential tech, we
believe the industrious among
us treat curiosity as a renewable
resource. They are called to
apply human determination
and technological innovation to
make a difference in the global
community. Industrious magazine
explores the stories that bring
this credo to life.

© Copyright IBM Corporation
2019. IBM, the IBM logo and
ibm.com are trademarks of
International Business Machines
Corp., registered in many
jurisdictions worldwide. Other
product and service names might
be trademarks of IBM or other
companies. A current list of IBM
trademarks is available on the
Web at “Copyright and trademark
information” at [www.ibm.com/
legal/copytrade](https://www.ibm.com/legal/copytrade). 8WOQZV24

↑ Prism multi-color refraction
on paper edge



Letters from the editors

Industrious, Issue 7

Whether it's the way banks conduct financial transactions and governments take on traffic congestion, or new approaches farmers use to yield better harvests—there's a constant push to be seamless, secure and real-time.

As we look ahead and examine how businesses construct their organizations for the future, an accelerated approach is key. It's time to do business in a different way, made for the modern age of hybrid, multicloud and open.

That can mean moving mission-critical workloads to the cloud, modernizing infrastructure and applications once and deploying anywhere, or tapping industry expertise to build and sustain competitive advantage.

In the pages that follow are client stories of transformation in businesses just like yours. Cerealto Siro is rapidly bringing new food flavors to an international market. French-Italian insurer Groupama is helping to prevent risks, not just predict them. Switzerland's Banque Cantonale Vaudoise began by optimizing transactions, and now sees a much larger opportunity to streamline its core banking to benefit all its clients.

What will your story be?

—Juan Zufiria
Senior Vice President, Global Technology Services, IBM



↑ Juan Zufiria

The world is struggling with issues that bear the weight of our collective future: human trafficking, the HIV/AIDS epidemic, a desperate need for clean water.

We in the tech community have a responsibility to apply our research, our know-how, our expertise and our humanity to bring light to seemingly impossible problems and find a way forward. We have a responsibility to invest in tech for good.

While hope is an essential ingredient in progress, what I see in the remarkable stories of this issue is a determination to make a difference.

“If you can track the money, you can track the people.”

“It's about saving as many lives as we possibly can.”

“When we know the cost [in water usage] of items we use every day, then we're conscious of how we can make ethical choices.”

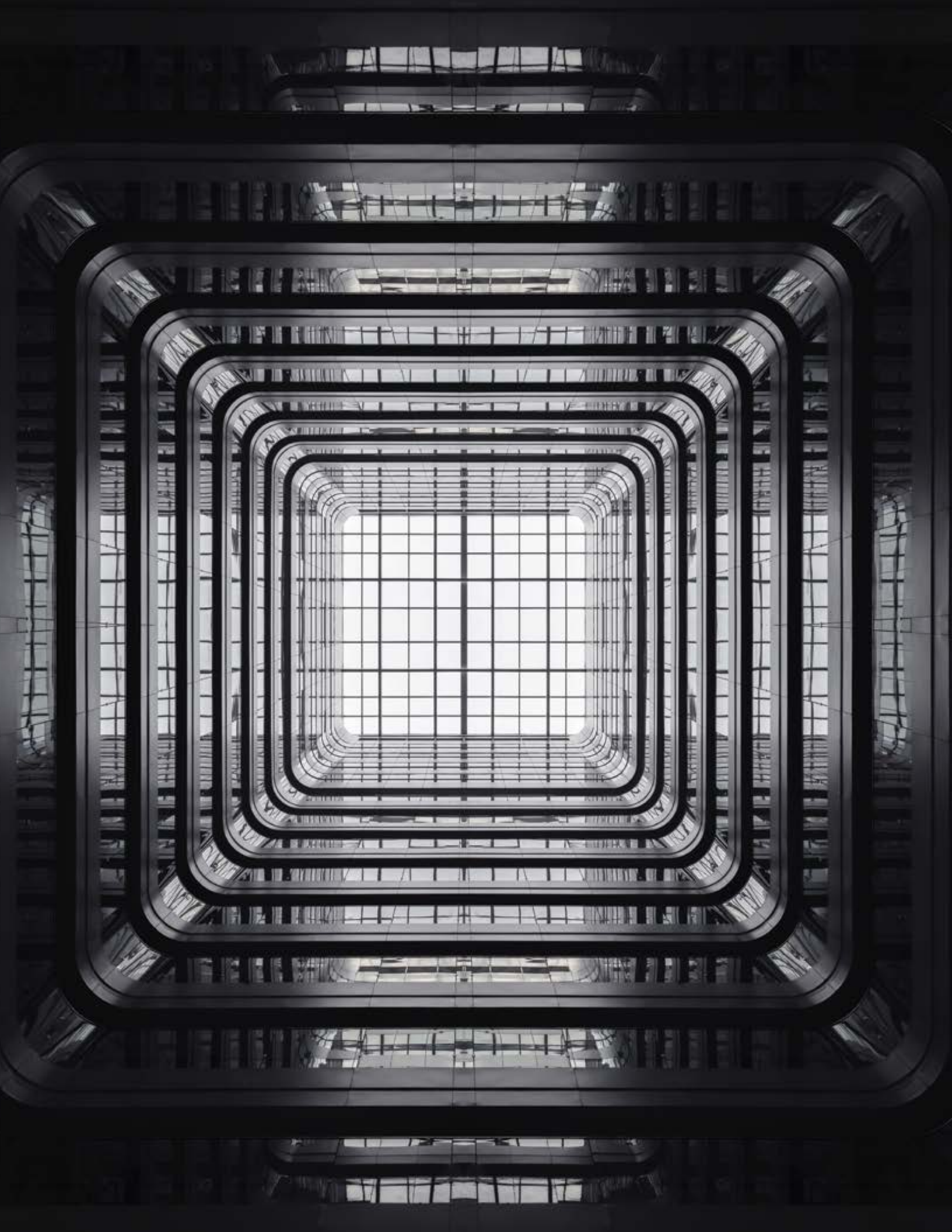
Banking data is being used to combat the trafficking of humans. A state-of-the-art tracking system is improving medical aid across Africa. And recycled ice is awakening a need for conservation across the world.

The circumstances may be dire, but our conviction is deep.

—Sharon T. Driscoll, CMO Industry Marketing
& VP Sales Enablement, IBM



↑ Sharon T. Driscoll



Banque Cantonale
Vaudoise is using
IBM Financial
Transactions
Manager as the
foundation for its
digital reinvention

words: Matt A.V. Chaban

Looking up through apartment
building patio in Beijing, China

05

ISO 20022

“With more people choosing digital payments over cash and governing bodies changing regulations to keep pace with that change, it can be difficult to keep up.”

—Serge Messin, Banque Cantonale Vaudoise



ISO 20022 may sound like a test for the tolerance of airplane wingnuts or turbine efficiency in a hydroelectric dam.

It is both more complex and simpler than either and, to the people of Switzerland, will have even more bearing on their daily lives.

The ISO 20022 standard is what ensures money is in the bank twice a month when a paycheck clears. It executes the auto-payment on hundreds of thousands of outstanding home loans from Bern to Zurich to St. Moritz. ISO 20022 will cover that Toblerone bar at the Aldi supermarket and pass on tips to the Uber driver and Eat.ch delivery guy.

According to the International Organization for Standardization based in Geneva, ISO 20022 is “a set of XML and ASN.1 design rules” that enable “a modelling methodology to capture, in a syntax-independent way, financial business areas, business transactions and associated message flows.”

For the person waiting for cash to dispense from

an ATM or their credit card to clear at the convenience store, the ISO 20022 standard is simply the common digital language that allows that machine to talk to their bank—as well as numerous intermediaries, such as credit card companies, payment processors, lenders—so their transaction can go through. And go through almost instantaneously, without any interruption from competing or legacy payments standards.

As the universe of digital payments has exploded in recent years, the need for universal ISO 20022 adoption is more urgent than ever.

Global non-cash transactions reached a new high of \$483 billion in 2016, according to the 14th annual World Payments Report released in 2018 by Capgemini and BNP Paribas. That’s a 10 percent increase from the previous year and a 45 percent increase since 2012. While much of this growth is driven by emerging markets, there is still plenty of payments expansion happening in Switzerland and Europe as a whole. Over the same half decade, digital payments grew 30 percent on the

continent, reaching \$109 billion in 2016. That’s up nearly 30 percent from \$84 billion in 2012, according to the World Payments Report.

Historically, these inter-institutional transactions were processed in myriad, sometimes competing, programming languages. Each additional step introduced vulnerabilities to their systems, both to system failure and hack, as well as creating friction and lag.

That’s why in 2015 the Swiss National Bank decided ISO 20022 adoption was essential to create a reliable national standard for payments. The country’s roughly 250 financial institutions, from global stalwarts like UBS and Credit Suisse to local lenders with only a few hundred depositors, would have to transition all their payments systems by 2021.

Banque Cantonale Vaudoise is the country’s sixth largest lender and second largest of its cantonal banks (each of Switzerland’s 26 states, or cantons, has its own public or semi-public bank). ISO 20022 implementation would be a considerable undertaking for BCV, as the bank

is known, given its size and stature. The bank and its 74 branches serve Vaud, a state on the northern slopes of Lake Geneva bordering France.

When BCV began debating ISO 20022 adoption in 2016, it had a large task ahead.

“Our existing payment processing system was not equipped to handle the new ISO 20022 message format,” Lars Kermode, the bank’s head of IT architecture, said. “To comply with regulations, we knew we would need to make significant changes to our payment processing infrastructure.”

That system had been cobbled together over the course of three-plus decades, dating to the dawn of electronic transfers and ATMs—a far cry from the XML standard required by the ISO 20022 format. BCV’s payments still ran on a similar COBOL framework to when it launched in the 1980s.

Beyond the technical challenges, many Vaudois livelihoods were at stake. According to BCV, the bank

↑ Paying with just a tap in a café in South Africa



↑ Grossmünster and Fraumünster churches in Zurich, Switzerland

handles accounts for 370,000 of the canton's 793,000 residents. Roughly one out of two Vaudois businesses banks with BCV, supporting around 200,000 jobs in the canton. BCV also handles more mortgages than any other lender in the canton, serving one in three property owners. At the end of 2018, its assets totaled roughly 48 billion Swiss francs.

After considering doing all the programming in-house or outsourcing it entirely, BCV decided that the best way to handle its migration to the ISO 20022 standards was to train its platform team on IBM's Financial Transaction Manager. The platform can seamlessly integrate and replace legacy code with dozens of modern standards, including the XML and ASN.1 that ISO requires.

"The banking sector is undergoing major upheaval," Serge Messin, BCV's head of IT solutions, said. "With more people choosing digital payments over cash and governing bodies changing regulations to keep pace with that change, it can be difficult to keep up."

Yet what started out as a simple exercise in compliance has proven so successful that it's kicking off a far greater transformation of all digital banking at BCV.

In summer 2018, the bank decided to expand its work on the Financial Transaction Manager to deploy additional services to clientele. In the coming years, when a BCV customer opens an account online, makes a mortgage payment or transfers money between saving, checking and investment accounts, they will be doing so through applications built into the Financial Transaction Manager. BCV also upgraded its workhorse Z13 mainframe servers to even more robust and efficient Z14s in April 2018 in order to handle the expanded capacity its customers will require.

"In the long term, we want to extract legacy functionalities off our core banking platform," Kermode said. "This will streamline our core banking system, make it more efficient, and modernize our architecture."

And, thanks to this work, BCV's payments system will now be just as reliable as a Swiss watch. ⚙️



↑ Produce market worker processes payment

"In the long term, we want to extract legacy functionalities off our core banking platform. This will streamline our core banking system."

—Lars Kermode, Banque Cantonale Vaudoise

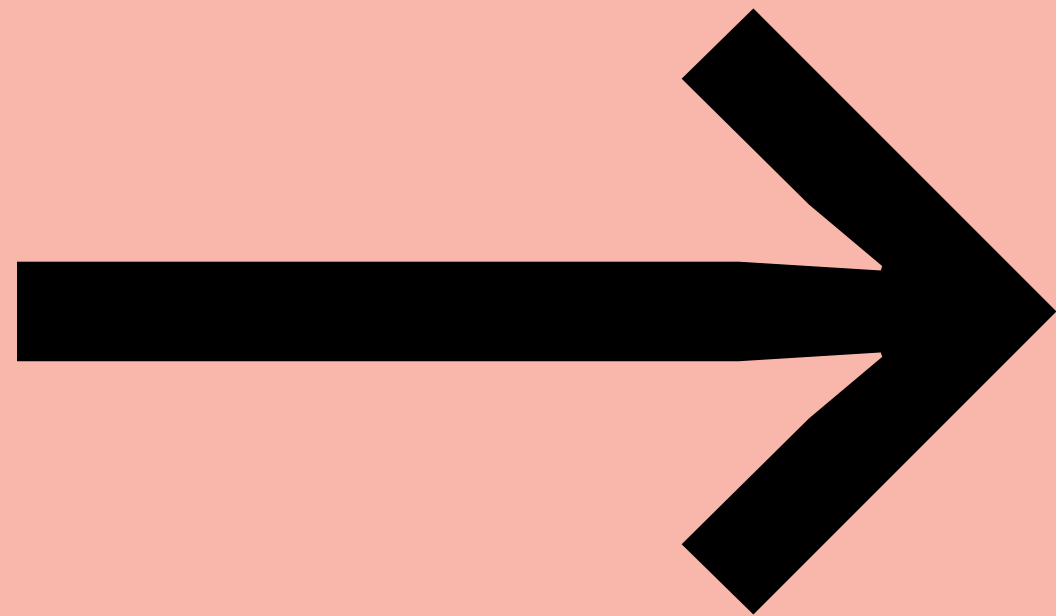


↑ Motorcycle shop customer uses credit card reader

Alexandra Willis

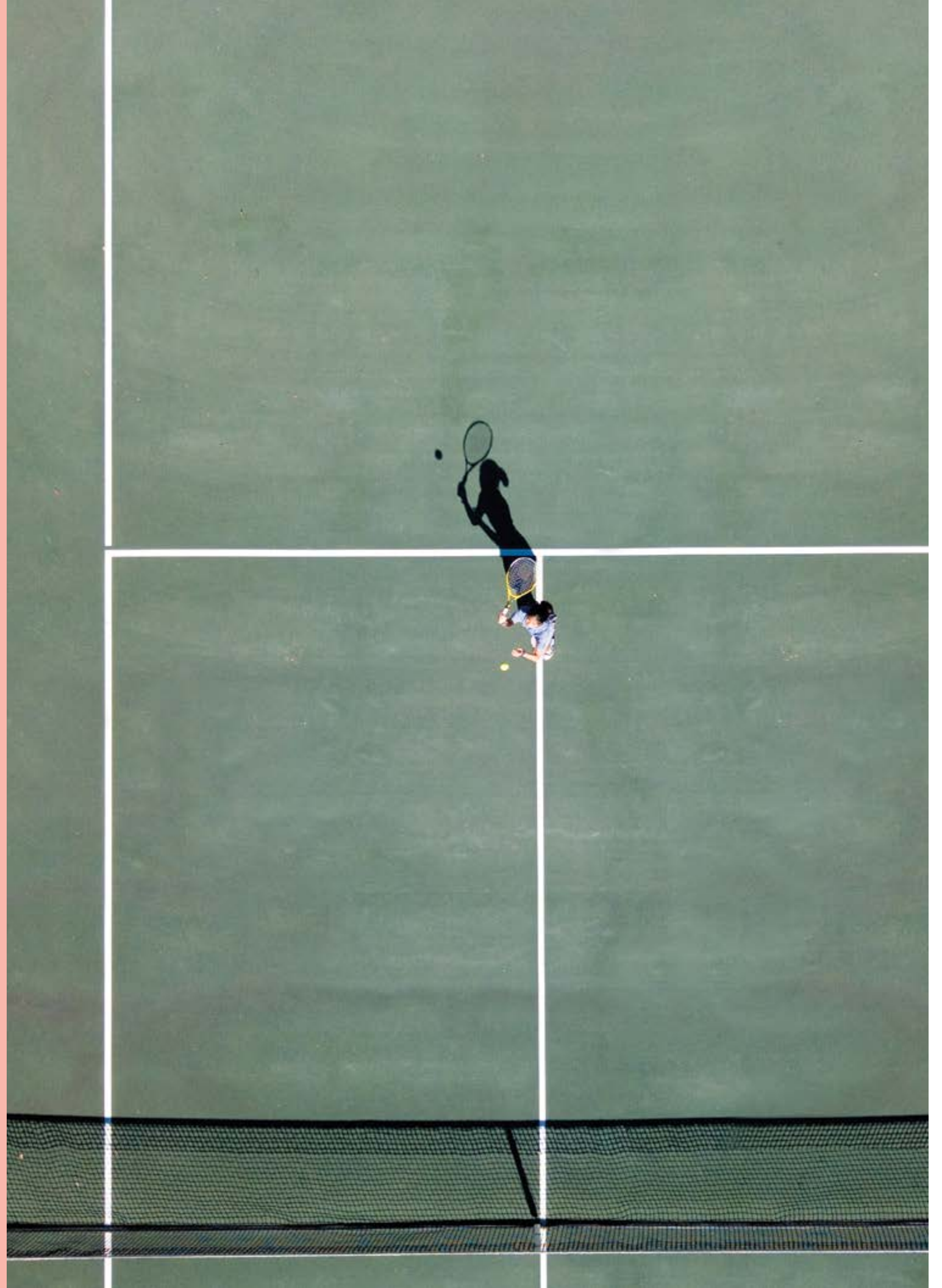
Serving variety: how
Wimbledon's content
chief courts fans

words: Justine Jablonska



12

→ Woman plays tennis in California





A billion fans engage with Wimbledon in any given year, and it’s up to Alexandra Willis to decide what the majority of those fans see and hear.

“My role is to be the guardian of Wimbledon’s external voice,” Willis said.

Willis is head of communications, content and digital at The All England Lawn Tennis Club. This year’s championships will be her ninth. She spoke to Industrious from her London home base.

Wimbledon is the world’s oldest tennis tournament, and the only major that’s still played on grass. Throughout its 140-plus years of existence, it’s hosted some of the sports world’s most thrilling triumphs, most devastating defeats, most hairpin comebacks.

Willis’ team brings Wimbledon’s stories to the world.

“What content will inspire people, bring people to us, and truly reflect the amazing breadth and opportunity of the event?” she said.

This year, her team is highlighting stories impacted by worldwide events.

One is that of Althea Gibson, the first black player to win Wimbledon. The year was 1957, the height of the civil rights movement in her US home. Gibson spoke of the stark contrast between meeting the Queen of England after her win, and the segregation she and so many other black Americans experienced back home.

“There’s this roar from the stadium that erupted through the glass. It was the most amazing moment.” —Alexandra Willis, Wimbledon

Tennis legend Billie Jean King often quoted Gibson as one of her first inspirations. Willis’ team is highlighting King this year as well—for her accomplishments on and off the court.

“For sports, and for women’s rights,” Willis said. “For saying that we women have a voice.”

And then there’s Andy Murray, and the complicated, love-hate relationship between him and the UK. Once widely criticized, he’s become one of Britain’s most loved spokespeople, and Willis’ content dives into how that transformation happened. (Yes, the crying helped.)

While it’s players like Gibson, King and Murray who draw those nearly billion-strong crowds, Willis’ focus is on the fans—both those who physically attend, and those who watch from one of the 200-plus territories the event is broadcast.

So how does her team decide which content will resonate with all those fans?

Willis firmly believes that the best outcomes occur when there’s diversity of thought—whether age, gender, background. Wimbledon’s extraordinarily global fan base is an opportunity to bring that diversity of thought to life.

One way her team does that is through research. There’s a perception, for example, that the men’s game is the most exciting, powerful, with intense rivalries. But when asked, Wimbledon’s fans said they love variety.

“We were being led by perception,” Willis said. “Our





↑ Closeup of tennis net

fans said, we love men’s tennis but we love women’s tennis too, and we love wheelchair tennis. We love long sets and thrilling matches, and interesting tactical matches. All types of tennis.”

Conversations are regularly happening in the sport around equality, she notes. Last year, her team pledged that all its content would be 50/50 split between men and women—like the draw itself. That also reflects a 50/50 balance in terms of gender viewership—a rarity in sports.

Wimbledon’s fans have responded positively, Willis said. Her team has also spent time educating some vocal fans about why the club’s accounts aren’t posting about Roger Federer every day of the week. Though he’s the most popular player in the world and would certainly drive clicks, “that’s not necessarily the right thing to do.”

Instead, her team is highlighting lesser known stories. Like the story of Heidi El Tabakh, the first Egyptian-born player to play in last year’s Grand Slam. “Who happened to be a woman,” she said. “There are lots of different ways to support that without forcing it.”

Willis loves that aspect of today’s digitally connected world, where everyone has the opportunity to connect with and learn from different types of people regardless of their industry.

“The brilliant thing is that there’s a hero / role model out there for everyone,” she said. “We don’t all have to be following the same ones.” She sees that as a positive force in developing people’s own identities.

“I think about that a lot when I think about the future leaders of tomorrow,” she said.

Willis was born in New York City and grew up in London. She’s always had a passion for sports. As a child, she watched Wimbledon on TV with her grandfather and father. When she brought her grandfather to the championships in 2010, he was ecstatic.

Her family is filled with doctors, but she studied history at Oxford University, where she also played lacrosse. She played tennis too, “just not particularly well.”

At university, she remembers thinking, “not many women worked in sports. I’ll be different.”

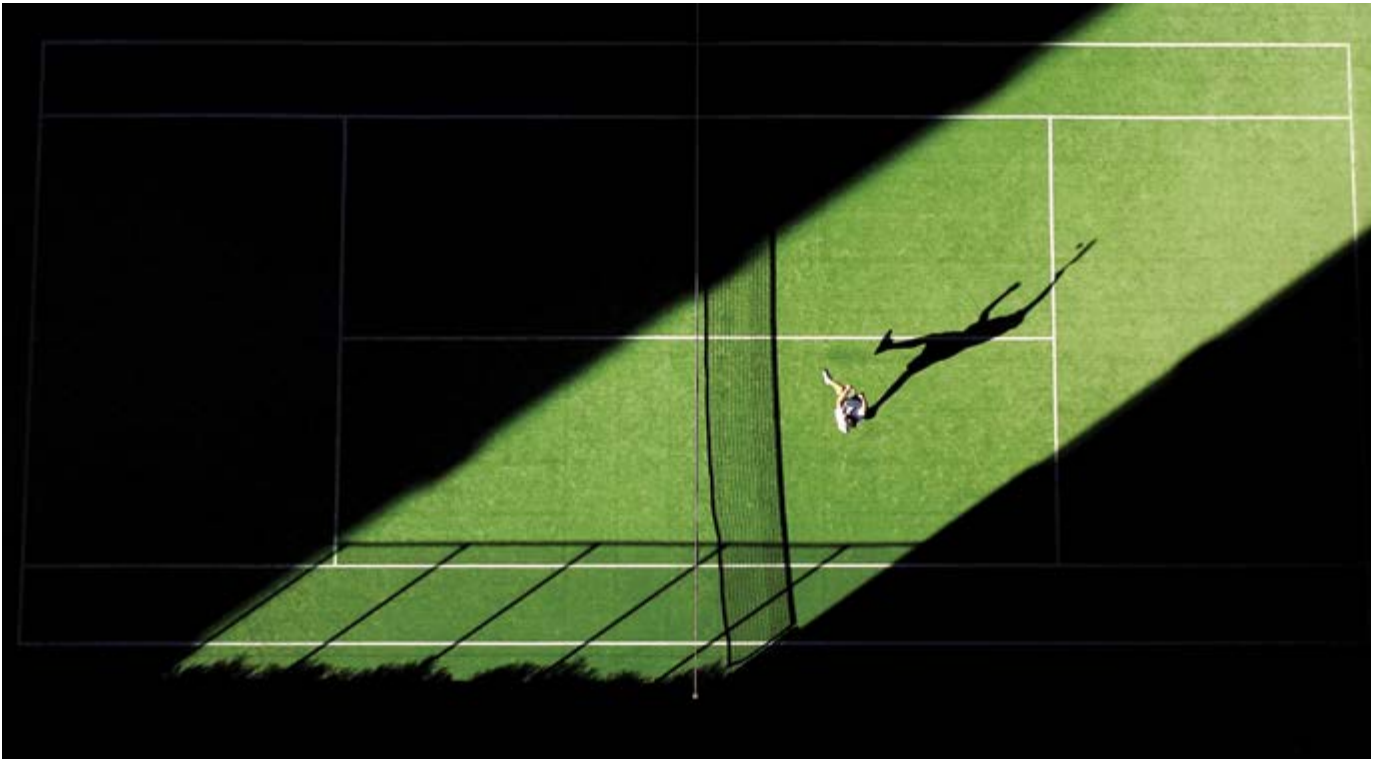
And while she brings her love of history to keeping Wimbledon’s traditions and history relevant, she also works to expand and stretch the brand so that it keeps that relevancy for decades to come.

To that end, her team is continuously working on creating personalized experiences for Wimbledon fans.

In 2018, her team partnered with IBM on AI-powered video highlights. This year, they’re launching MyWimbledon. The app tailors content based on whether a user is a ticket holder, hospitality guest, player, ball boy. Users can also control the experience by noting which players they’re interested in, which content they’d like to see.

“The reality is we’ve always got limited capacity inside the gates,” she said. “It’s about half a million people across the two weeks. And the appetite for Wimbledon is far greater than that.”

Though she and her team can’t recreate what it’s



↑ Overhead of smash shot across tennis court

↑ Closeup of tennis balls on field in court



like inside those gates, “we’re going to do our best. We’re saying, ‘you’re very important to us.’”

IBM is Wimbledon’s official IT supplier and consultant, and this year marks the 30th of the partnership.

“We’re working together to figure out ways that whatever the tech might be, it supports Wimbledon’s business challenge—which is keeping Wimbledon relevant,” she said. The teams iterate each year, and begin their work by focusing on the problem they want to solve, versus the tech itself.

As customer expectations shift, so does her team’s work around how to best serve the fans.

“We used to think that our fans were measuring us on what they’d experienced the year before, at Wimbledon,” Willis said. “The reality is they’re measuring us on what happened yesterday. They went to the theater. They bought something online, or in a store.”

So how much of Wimbledon does she herself watch?

“It’s a bit of a running joke,” she said, “and I’ve probably managed to watch a full match in person if you craft it together.”

One of her favorite memories is the 2013 championships. Andy Murray was on the verge of winning.

“We had this feeling: this could be it. He could be about to make amazing history,” she said.

She ran up to the soundproofed media boxes, and from there watched the cinematic scene. Two ant-like figures running back and forth. And no sound whatsoever.

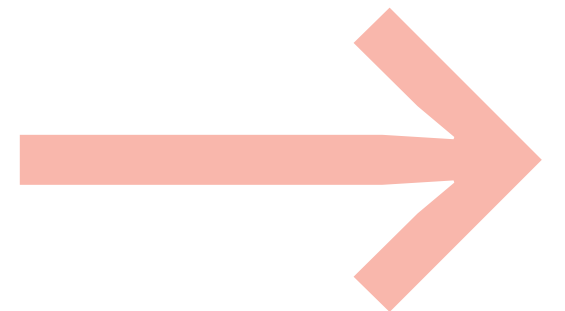
“He wins the point,” she said. “He wins the match. He wins the tournament. He makes history. And there’s this roar from the stadium that erupted through the glass. It was the most amazing moment.” 🦂



Blight Sight Flight:

The Swedish drone hobbyists fighting crop disease

words: Matt A.V. Chaban
photos: Jesper Cairo Westergaard



19

← Potato field infected with late blight in Give, Denmark

“The economic and environmental implications could be huge for Sweden, and for the rest of the world.” —Mats Persson, IBM

Mats Persson, a Business Manager with IBM Sweden, readily admits he did not set out to solve the problem of late blight amongst Sweden’s potato farmers, nor cut down on the nation’s use of pesticides, nor create an entirely new model for crop management.

Like so many innovators before him, Persson, and a few of his colleagues at the IBM Client Innovation Center in Malmö, just wanted to play with some high-tech gear.

“We’re all into photography,” Persson told Industrious. “And we basically wanted to figure out if IBM might buy us a drone.”

It was May 2016, and the Cognitive Build challenge, a six-month companywide competition seeking innovative AI projects, was just getting underway. During their afternoon “fika” coffee breaks Persson and his officemates began considering ways to harness drone photography alongside IBM’s latest technology. Persson lives near the Swedish University of Agricultural Sciences and suggested the team consider farming applications.

One afternoon, Persson ventured over to SLU (the university’s Swedish name is Sveriges Lantbruks-universitet) and began asking around the cafeteria if anyone was using drones in their work. Multiple people mentioned Erik Alexandersson, an associate professor of plant protection biology, who happened to be enjoying a coffee nearby. The pair struck up a conversation, and Alexandersson explained how his department was utilizing drone photography to detect late blight in potato fields.

“Just the word ‘blight’ has become synonymous with disaster,” Alexandersson told Industrious, “and for good reason.”

Phytophthora infestans (Greek for “plant-ruining attacker”) is caused by a fungus that rapidly produces spores in wet, mild conditions. Storms can be a potent vector, as are the damp environs synonymous with one of the world’s most infamous infestations of late blight: the Irish potato famines of the 1840s.

Once infected, a plant’s leaves, stems and tubers quickly turn a sickly, mottled black. “Stinking potatoes...” the Irish poet Seamus Heaney once observed, “pits turned pus.” Entire fields can be wiped out in under a week.

In Sweden, such devastation has an environmental impact well beyond crop yields. While potatoes make up less than two percent of the country’s agricultural fields, late blight alone accounts for a quarter of aggregate pesticide use. Swedish farmers have lost more than six billion Euros annually on blighted crops, plus the expense of preemptive spraying and fuel for tractors to spray.

With earlier drone detection, Alexandersson hopes suspect plants can be rooted out or at least more precisely sprayed, sparing their surroundings.

For centuries, farmers could only walk their fields looking for signs of late blight, scanning leaves and twisting stems. As digital photography has improved in resolution, some scientists have experimented with stationary cameras to monitor fields.

Alexandersson and his colleagues realized they could literally take this work to another level. With the more nimble and deployable drones, they can quickly transmit data to a computer or even smartphone. If anything looks suspicious, a human could be dispatched for closer inspection.

While not exactly back-breaking, drone-assisted detection remains arduous.

“It was a lot of imagery for a person to scan through,” Alexandersson said. “And this is just the small number of fields we are testing on. Think of all the farmland in the world.”

Upon hearing this predicament, Persson knew he had found his project.

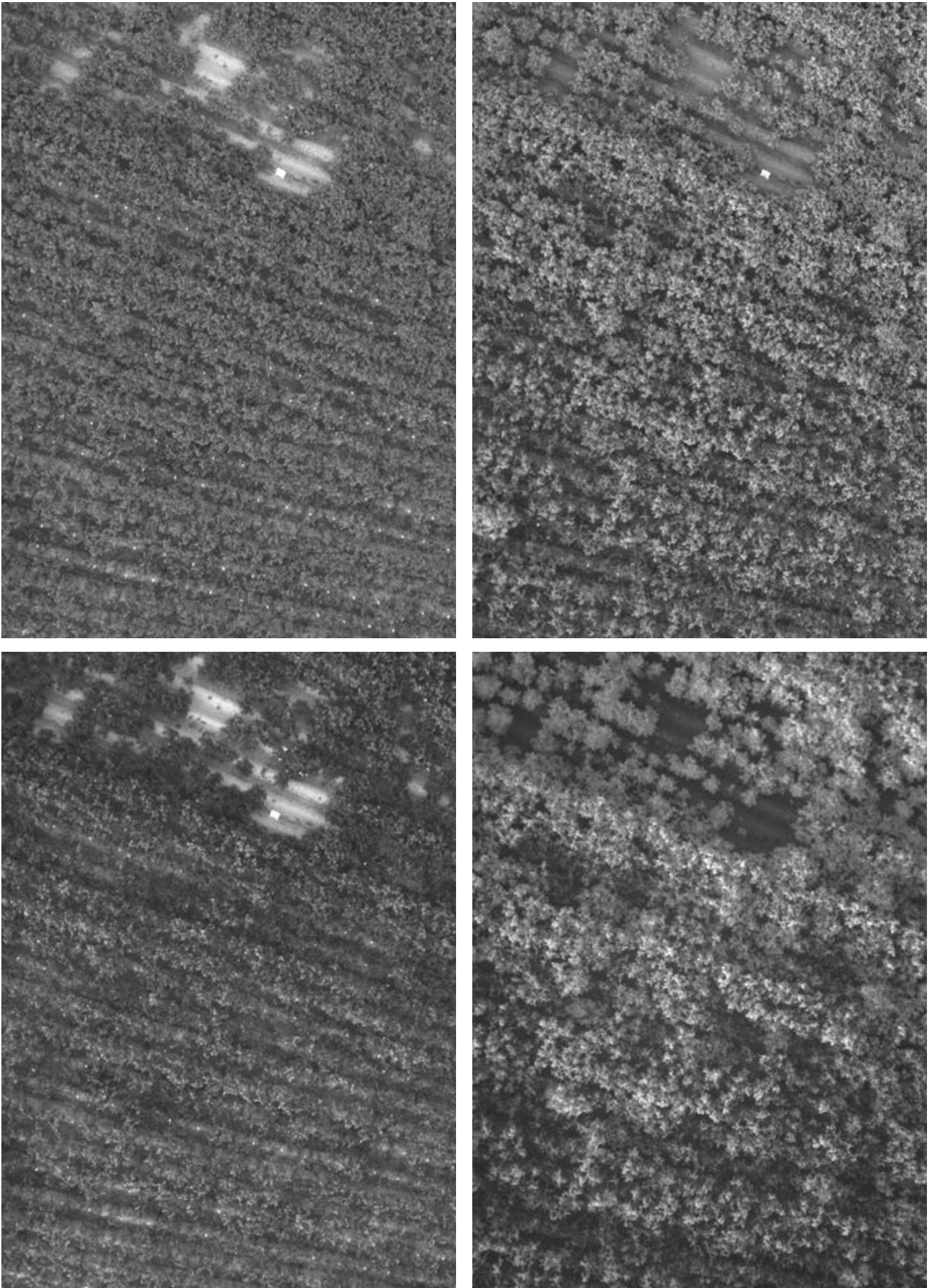
What if AI could identify the black marks of blight captured by drones, just as it now recognizes traffic lights, faulty welds and discreet cancers?

The SLU already had more than a thousand photos to work with, alongside an unexpected bounty already uploaded into Watson. University researchers in

↓ Researcher manually inspects potato plants in Give, Denmark



➤ Researchers use both RGB and spectral photography to look for signs of blight. Spectral photography can detect signs of decay that both humans and AI miss in color photos





In the field, Watson-enabled drones began accurately identifying infected crops three out of four times; in laboratory settings, identifications reached 97 percent.

↑ SLU professor Erik Alexandersson (left) in the fields with a student researcher

California had similarly been flying drones over infected orange groves. Though studying different diseases, the spectral signatures were similar enough to create a solid foundation, spanning two continents, to enhance the AI's blight-recognition abilities.

Over the 2017 and 2018 growing seasons, drones were deployed to four fields around Sweden and Denmark. Furthering the project's educational aims, IBM interns in Malmö led the development work alongside students and researchers from SLU.

In the field, Watson-enabled drones began accurately identifying infected crops three out of four times; in laboratory settings, identifications reached 97 percent.

Some of Alexandersson's peers still have greater precision—"We call it Watson versus Erland," he said of his top human blight-spotter—yet they can only review around three images a minute, while Watson can process ten-times as many.

While still years away, Alexandersson and Persson can envision a heartland where drones dart about like birds or insects, autonomously looking for blight and other issues. The most effective bots might even be terrestrial, small rovers programmed to travel along planted furrows inspecting leaves from below, where late blight is most obvious. These devices could theoretically signal larger machines to spray discreet amounts of fungicide or root out infestations.

"The economic and environmental implications could be huge for Sweden, and for the rest of the world," Persson said.

With the fungus utilizing around 25 percent of the country's pesticides, even a partial reduction would dramatically reduce costs and contamination while boosting yields.

As for the Cognitive Build contest, while Persson's project did not make the finals—to his chagrin—it ultimately helped IBM win an even bigger prize. In April, Yara, one of the world's largest producers of fertilizers and agronomy solutions announced, a partnership with IBM to build a globe-spanning agricultural platform. Persson's project was among the demos that closed the deal.

At full deployment, Yara's platform could service 100 million hectares of farmland, roughly seven percent of the Earth's arable land.

In the meantime, Alexandersson and his team spent the summer flying drones over test fields outside Giv, Denmark. There, a potato breeder had intentionally infected his fields to analyze which spuds were most blight-resistant.

"We picked up so many breeding lines, in such concentrations, it's going to be amazing for the data," Alexandersson said, excited by the sight of blight as only a researcher could be. 🌱



↑ Potato blossoms in the fields of Give, Denmark

Influencer

26

Chieko Asakawa, PhD
IBM Fellow, IBM Research

Your innovations have helped so many others overcome hardships. What's your most memorable innovation to date?

The IBM Home Page Reader is the most memorable project. I received much enthusiastic feedback from users. My academic paper has been cited by many papers. And overall, the software helped my career move forward to the next step.

Is there one problem that's yet to be fixed that you believe technology can help solve?

Mobility. It's difficult for the blind to walk around independently and enjoy the urban environment such as shopping or moving around an airport. It's not just people with visual impairments. We know people with wheelchairs, parents with baby strollers, and other people also have. I'm now working to solve the challenge by integrating AI technologies, so that we can create our world to be accessible for everyone. 🦿

Dr. Chieko Asakawa invents technology to make the visually impaired more independent.

In 1997, her work on the groundbreaking voice browser, IBM Home Page Reader, made available in Japan, US, Europe and Asia, opened up the internet and its information resources to the blind.

She was inducted into the Women in Technology International Hall of Fame in 2003. Both within and outside IBM, she actively works to help women engineers pursue technical careers.



↖ Woman reads Braille in Auckland, New Zealand

↑ Chieko Asakawa



Can predictive
supply chains be
the key to improved
global health?

words: Karam Singh Sethi

← Kumasi Central Market in Kumasi, Ghana

29

Chernorrics

industrious

28 – 29



The team is planning ways of predicting problems before they occur.

↑ Container ship passes through the Suez Canal

↗ Borana tribe woman holds her baby in Ethiopia
→ Karo tribe woman holds her baby in Ethiopia



“It’s about saving as many lives as we possibly can,” Tim Wood said en route to a USAID meeting. “The hospitals aren’t large, expensive buildings. In many cases, they’re remote structures in the middle of the desert.”

Getting bed nets, HIV medication and other health supplies from medical storage facilities in Washington DC to remote parts of Africa is no small feat. But Wood, a global supply chain VP at IBM, is doing just that. And he’s doing it with the help of a cloud-based predictive supply chain.

Global supply chains are crucial to any business or operation. And they have particular significance in the global health industry.

“In many cases patients have to walk two, three miles to get their medication,” Wood said. “It’s our job to make sure that medication is there on time.”

In 2017, international development contractor Chemonics and IBM came together to oversee one of USAID’s largest projects in history, worth nearly \$10 billion. The mission: deliver health supplies for HIV/ AIDS, malaria and reproductive health to more than 60 countries in sub-Saharan Africa, including Nigeria, Cameroon, Ethiopia and Kenya.

According to the World Health Organization, 770,000 people died from HIV-related causes in 2018. The largest percentage of victims was in Africa. Though those diagnosed with HIV can live long lives, only 62 percent of HIV-affected adults receive antiretroviral drugs, which can help fight infection and lower your chances of transmitting the disease.

“It’s not like ordering a pair of sneakers off Amazon,” Wood said. “Hospitals and clinics place orders for so many medical supplies that they could fill three football stadiums.”

The logistics are staggering. Shipments of that size require coordination between shipping vessels, local governments and medical staff. Tracking the various milestones across those numerous supply chains is a challenge. The tracking system needs to ingest data from various sources and track shipments, spot areas for improvement and predict when orders will be late.

To manage a mission of this magnitude and complexity, Chemonics and IBM created a first-of-its-kind global

supply chain operations platform, Automatic Requisition Tracking Management Information System (ARTMIS).

ARTMIS includes an online catalogue, optimization techniques and data visualizations that help manage orders up to 24 months out empowering distributors and local Chemonics team members.

“We created an early warning system,” Wood said. “If an order was going off track we would be notified and could act on the obstacle immediately.”

And with transcontinental orders that could fill football fields, obstacles definitely occur.

To get supplies to hospitals in remote areas, Wood’s team not only coordinates between chartered planes and ships, but also ensures proper country-specific waivers are granted. Every recipient country has specific policies and regulations that must be followed. The waivers can take up to six months to be approved, and if the approvals don’t come through, supplies can get held up at border checkpoints—or never leave the distribution centers at all.

Besides tackling obstacles in real-time, the team is also planning ways of predicting problems before they occur.

ARTMIS features dashboards that allow for pervasive data visibility throughout the supply chain, not just to the central warehouse. And because the solution is based on the IBM Cloud, these capabilities are available worldwide.

Tom Coleman, a supply chain management practice leader at IBM, believes predictive analytics for supply/demand forecasting isn’t a pipe dream.

“We’re now in a place where we can actually recommend orders,” Coleman said. “Say a country orders two years’ worth of bed nets. Through advanced analytics in ARTMIS, we can see how much of the order is reaching patients and make recommendations to save on costs.”

To date, ARTMIS has led to an on-time delivery rate of 90 percent and has helped save \$88 million. That, in turn, has helped Chemonics procure more medical supplies.

For Wood, the work supports a critical mission.

“Our goal is to help eradicate HIV across Africa,” he said. “If the logistics are in place, we can do it.” 🗞

More:
<https://ibm.co/industrious7services>



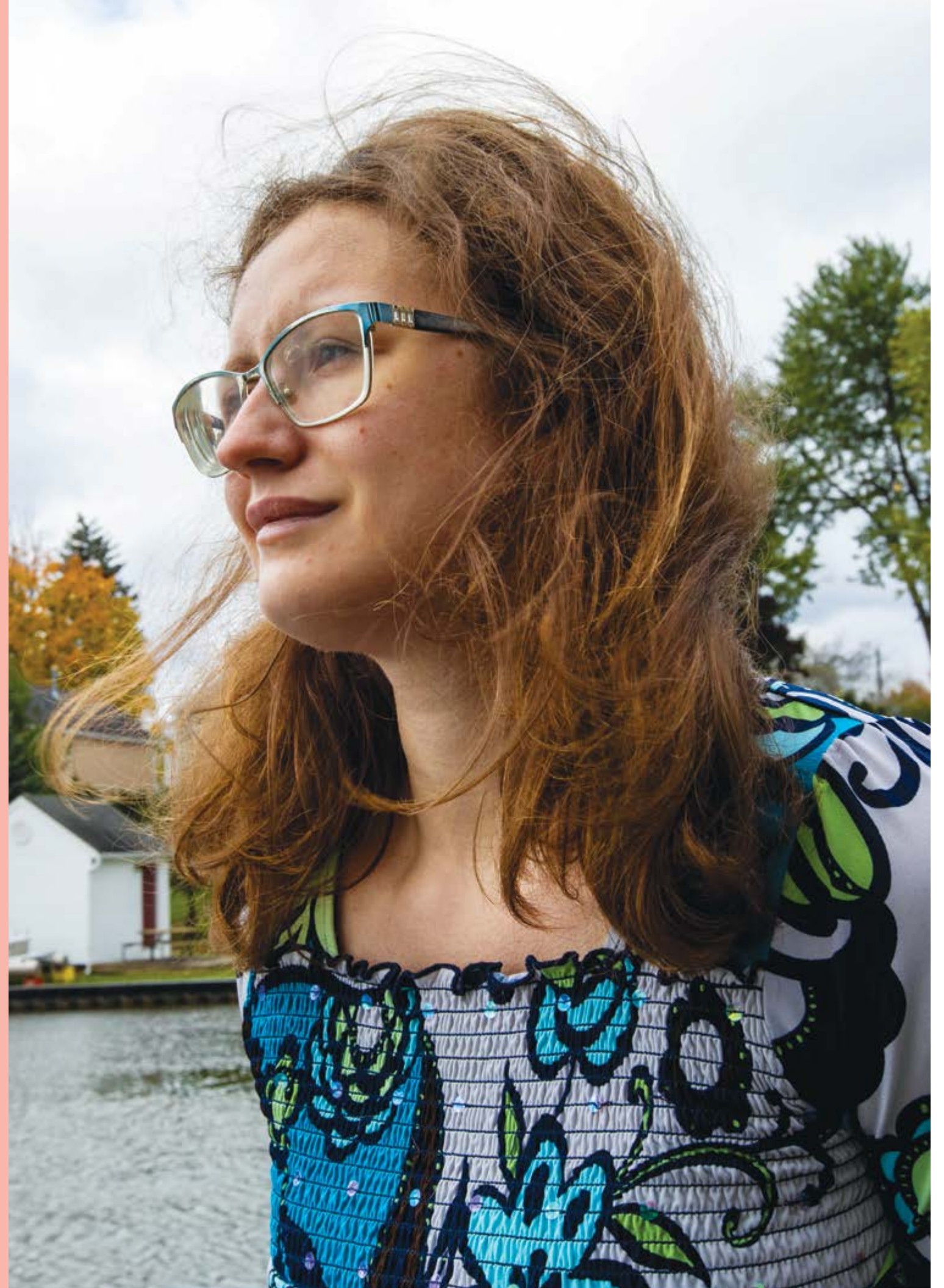
↑ Doctor treats boy in Tanzania

When neuro- diversity works

words: Dayna Sargen

34

→ Ingrid Weiss





“It’s the disruptors
who make
people’s lives better.”

—Ingrid Weiss

Ingrid Weiss had a creative and fulfilling childhood. She fostered her creativity and intellect through activities like dance and art. She excelled at academics, eventually graduating from college with honors.

But when she sought to fulfill her next mission—a meaningful career—she struggled.

Weiss was diagnosed with autism spectrum disorder when she was a child.

“One day I was taken into special ed,” she said, “and given a book about, what is this autism thing? And what does it mean?”

Though autism had never stood in the way of her goals, finding gainful employment seemed an uphill battle. Because verbal and non-verbal communication can pose a challenge to individuals on the ASD spectrum, job interviews—an already high-stakes situation—can be difficult.

“I spent over half a year just saying, ‘Oh, yeah. Another failed interview. What a surprise,’” Weiss said.

In the United States, 1 in 59 children was diagnosed with autism spectrum disorder in 2018, according to the US Centers for Disease Control and Prevention. More than half of young adults with autism remain underemployed, according to Autism Speaks. And nearly half of 25-year-olds with autism have never held a paying job.

That means that talented, intelligent individuals like Weiss struggle to find the right fit for fulfilling employment, or any employment at all.

“Neurodiversity is really a unique approach to thought,” said Pam Weiss. “Our daughter Ingrid has a different thought process than a neurotypical person might have. Sometimes that neurodiversity is a gift and it allows some creative problem solving. It can also be a challenge because there is some need to have a lot of consistency in things like schedule, a lot of sensitivities to the environment.”

In support of individuals like Weiss, IBM launched the IBM Ignite Autism Spectrum Disorder program in 2017. The program’s goal is to help transform spectrum talent by employing them locally and delivering their unparalleled talent directly to IBM clients.

“We are taking into account the great diversity that people bring,” said Christine Bartlett, Director, IBM Lansing Client Innovation Center. “That in itself is going to add value to our clients. It has definitely given people



a broader look. I think they have learned to appreciate differences that people bring to the table.”

In partnership with Specialisterne, the program provides the planning, resources and support needed to successfully launch the careers of employees who are on the spectrum.

Emphasis is placed on onboarding and then supporting the employees as they navigate their new employment. New hires are given headphones to help reduce and even eliminate possibly bothersome noise.

IBM’s Watson application, Content Clarifier, is used to make potentially complex instructions more clear, straightforward and simple.

IBM also integrates its neurodivergent workforce with colleagues through regular meetings and social activities to help combat social anxieties and foster collaboration and team building.

The clients where Ignite employees have been placed give the program high marks.

Client Ahold Delhaize employs Dyllan Rafail, who self-identifies as having autism spectrum disorder.

Rafail works with Nancy Silva, QA Portfolio Manager

for Retail Business Services, on testing mobile apps. Previously, Silva’s team had tested apps on various phones one at a time. Rafail examined the existing process and built a more efficient solution to test up to eight phones simultaneously.

“[Rafail] has been a great addition to our team,” Silva said at a recent IBM event. “We value the unique perspective he brings, and value he adds to our business.”

For Rafail, the opportunity to grow and contribute has been extremely valuable. He too, like Weiss, had struggled to find gainful employment.

“It seemed as if there was an instruction manual that everyone else had for communicating and reading other people that I did not have,” Rafail said. “I don’t know how I would be handling this a year and a half ago when I wasn’t working.”

Weiss has received similarly glowing reviews from her employer in Lansing.

“Ingrid has been a wonderful attribute to our Testing Team,” IBM Delivery Manager Amanda Dennis said. “I have appreciated the positive energy she brings to the

team and her willingness to help train colleagues in areas of her expertise.”

Weiss approach every task with a passion for technology and out-of-the-box thinking, according to Dennis.

“I’ve had the opportunity to watch Ingrid grow into a leader, stepping up to assist in awareness training for our center and broader IBM,” Dennis added. “She is an inspiration and I feel honored to be her manager.”

IBM plans to create more than 300 new jobs globally for individuals with ASD by 2020.

For Weiss, the program has been life-changing. “It’s given me the leg up I was desperately looking for,” she said.

For Ingrid’s mother Pam, the program has also had a profound impact.

“We didn’t used to know what to do with a deaf employee or an employee in a wheelchair,” she said. “Now that we’ve adapted to those things, we can learn to adapt to neurodiversity.”

And for Ingrid, she believes that individuals with neurodiversity are a “blessing in disguise” that, thanks to their different thought processes, see things differently—and see things that are new and unexpected.

“We call that sort of thing a disruptor in the tech world,” she said. “And it’s the disruptors that make people’s lives better.” 🐾

More:
<https://ibm.co/industrious7neurodiversity>

➤ Zachary Cairns, IBM software tester





In 2030,
waning interest
in brands
and growing interest
in data security
will drive
auto consumers

words: Matt A.V. Chaban

↖ Electric US-made car drives through
tunnel in Munich, Germany

41

Auto 2030



“Cars used to be vehicles with little computers embedded throughout them. Now they’re becoming giant computers that just happen to take us places.”

—Benjamin T. Stanley, IBM

When it comes to cars in the next decade or two, the brand is dead—long-live the brand.

Just ask the nearly 12,000 consumers surveyed around the world by IBM’s Institute for Business Value. When quizzed about their vehicle preferences when using e-hailing, ride-sharing or, someday, autonomous vehicle services, almost one-in-two respondents (48 percent) said brand wasn’t a deciding factor.

More consumers, when queried for the institute’s Automotive 2030 report, said they’d prioritize price, convenience and data security over the typical considerations of high-performance features or premium detailing. And these shifting priorities were consistently evident whether consumers were considering how they’re utilizing e-hailing apps or which smart vehicles to purchase someday.

“How are car companies going to keep loyalty to their brands when the traditional things that drivers have looked for—how a car looks, how it handles, the horsepower—are no longer of interest if you’re not driving?” said Benjamin T. Stanley, an author of the 2030 study, *Racing Toward a Digital Future*. Stanley co-wrote it with Daniel Knoedler and Dirk Wollschlaeger.

Cruise control, lane-assist and infotainment centers have already propelled vehicles’ evolution from mechanics to tech. Stanley points to smartphones as an example of what lies ahead for smart vehicles: our handheld devices have become largely indistinguishable, while what matters more are the user interface and apps inside.

Features consumers say they value most in the smart vehicles of the future: the security and privacy of their data.

The same is happening with cars and trucks: reliability, affordability, connectivity and especially accessibility—going places both real and virtual—are becoming basic features, not extras.

“Cars used to be vehicles with little computers embedded throughout them,” Stanley said. “Now they’re becoming giant computers that just happen to take us places.”

This shift is all the more reason auto manufacturers must burnish their brands in ways they never imagined. While most people won’t recall the vehicle make or model from their last e-hailing trip, they do probably remember if they used Uber, Didi, Lyft or Kapten.

This shift has left many automakers racing to figure out how they remain household names. Again, Stanley points to smartphones: Auto companies want to be high-tech innovators, like Apple or Samsung, and not Foxconn, the Taiwanese manufacturer that assembles iPhones, Playstations and Kindles.

As smartphones do much more than make calls, smart cars will have to do much more than move people around to make consumers want to use a specific one. Automakers, Stanley said, will have to develop a seamless digital ecosystem just as compelling as the ones in our pockets.

Given this technological shift, it may come as little surprise what features consumers say they value most in the smart vehicles of the future: the security and privacy of their data.

Some 57 percent of urbanites and 46 percent of rural residents strongly agreed that data security and privacy would be their top criteria when using e-hailing, ride-sharing or autonomous vehicles. Only 48 percent and 28 percent, respectively, said the choice of premium brands would sway their decisions.

Having a luxury chassis or turbo-charged engine actually ranked as the least important consideration, despite historic preferences. Differentiators like loyalty programs (53 percent urban and 40 percent rural) and speaking to the vehicle naturally (50 percent urban and 33 percent rural) have overtaken marquee brands in their appeal.

As for who’ll be using cars versus mobility services, the study had some unconventional answers. For both urban and rural respondents, two in three (or 65 percent) said they would still prefer the option of a personal vehicle for their trips a decade from now. That’s despite living in different environments with vastly different transit options.

Such preferences underscore the aspirations of each group. Urbanites are often inconvenienced by the prospect of owning a vehicle but still want one. Rural residents need vehicles to get around but find them expensive and onerous.

All the more reason it’s up to the automakers to find new ways to rev consumers’ engines and keep them as loyal customers. 🚗



Your morning commute in 2030

words: Benjamin T. Stanley

It's a sunny Monday morning, and you're ready for work. The vehicle you ordered Sunday arrives—let's call it ACES, short for Autonomous, Connected, Electrified and Shared—and you get in.

The first thing ACES does is wish you a happy birthday. As you buckle up, it plays "Birthday" by the Beatles as social media greetings from family and friends flash across the interior's multiple screens.

ACES departs for your destination, picking a route that avoids traffic while making a detour so you can pick up dry cleaning. It begins playing your newest audiobook, picking up right where you left off listening in the kitchen.

Along the way, ACES quietly scans your health vitals and coordinates with your fitness app. It checks your house in case the washer or TV was left on. ACES suggests you might walk the last mile because you missed your exercise target last week.

ACES pings a list of locally approved businesses as you go. While passing the theater, it suggests a concert your spouse wants to attend. ACES checks your calendars, ticket prices and availability, then confirms the purchase.

Approaching your destination, ACES stops so you can take that walk. It makes a note of any new preferences in your mobility profile before wishing you a good day.

It then heads to its next scheduled customer, setting up their personalized experience en route. 🚗

Excerpted from the IBM Institute for Business Value report Automotive 2030: Racing Toward a Digital Future

Influencer

46

Suk-Jea Hahn

Executive Vice President
Global Mobile Enterprise &
Government Team
IT & Mobile Communications Business
Samsung Electronics Co., Ltd.

SJ Hahn joined Samsung Mobile in August 2015 to lead the company's double-digit growth and market expansion in the fast-growing global mobile technology and services sector.

Prior to Samsung, Hahn spent 30 years at IBM and held various global sales and marketing leadership positions. Mr. Hahn was responsible for driving IBM's high growth in Asia Pacific, America, Central and Eastern Europe, Middle East and Africa, encompassing 154 of the 170 countries in which IBM does business.

Hahn holds an MBA from Kellogg Graduate School of Management, Master's in Electrical, Chemical and Biological Engineering from Iowa State University, and Bachelor's in Chemistry and Biology from Cornell College.



“Experience innovation is only possible because of the next generation of wireless technology: 5G. AI, cloud computing and advanced algorithms, among other advancements, were already changing how we use and interact with data and technology.”

—Suk-Jea Hahn, Samsung

Why is the time for 5G now?

For almost a decade, Samsung and partners have worked tirelessly to develop new technologies. The goal is to push our clients in industry and government into a whole new level of productivity, intelligence and connectivity. We call this unprecedented progress the dawn of “experience innovation.” Experience innovation is more than just new features on a device. It is the complete integration of new advances in hardware, software and services from Samsung and our vast partner ecosystem.

Experience innovation is only possible because of the next generation of wireless technology: 5G. AI, cloud computing and advanced algorithms, among other advancements, were already changing how we use and interact with data and technology. However, the high speed, low latency and massive throughput generated by 5G will be the catalyst for new applications. These applications will truly change the way consumers, business and governments interact with the world around them through unprecedented and reliable wireless connectivity.

Samsung recently released the Galaxy S10 5G smartphone, giving consumers and businesses the power and speed of a fiber connection in their pocket. Just as 4G LTE transformed nearly every aspect of our lives, so too will 5G. From the home, the office, and everywhere in between, 5G’s mobile applications will enable faster, more accessible connectivity for new technologies like big data, cloud-gaming, augmented reality (AR) and autonomous vehicles. Transportation, manufacturing and even entertainment are a few examples of industries that are impacted by 5G.

Which industries will be impacted?

5G means a lot of different things to different people within the industry. The aspects that are most talked about today, such as improvements to throughput and latency, are parts of a much larger puzzle that the telco industry is working hard to solve. The end goal of 5G is to fundamentally transform the way we make use of mobile devices.

That, of course, means a significantly faster and more responsive user experience. However, it also



means enabling entirely new use cases that go beyond the traditional boundaries of the mobile industry. This will be achieved by pulling in dozens of previously unconnected or under-connected industries—from automotive and home entertainment to city planning and public safety. In fact, our earliest 5G trials have already begun to explore use cases that have not typically leveraged wireless connectivity in the past.

A few examples/use cases that can only be possible with 5G:

Smart Factories

Last year, Samsung announced that we are working with AT&T to create America’s first manufacturing-focused 5G “Innovation Zone” at our leading-edge semiconductor factory in Austin, Texas. The cooperation will help both companies, and the industry as a whole, to gain insights into how 5G can lay the foundation for safer and more efficient smart factories. With technology available today, smart factories can maximize 5G’s potential with AR applications to assist workers, video analytics to improve safety and security,

and automation to improve operational efficiency.

Smart Homes

5G offers turbo-charged network broadband, 20-times faster than 4G LTE, with 10-times lower latency. What that means for smart homes is that more devices can be remotely controlled by a home automation platform like Samsung SmartThings, even from a long distance—with lag-free, near-instantaneous reaction times. The SmartThings solution allows users to control, automate and monitor their home environment, appliances and security via mobile devices.

Transportation

Connected cars and trucks will be safer to drive with constant updates on traffic and road conditions and enhanced collision avoidance, taking full advantage of 5G’s extreme low latency and large-scale sensor support. With 5G, Samsung and Harman are working closely with the 5G Automotive Association to develop new Cellular Vehicle-to-Everything (C-V2X) technology to communicate with smartphones and wearables, pedestrians, bicyclists, and even scooter riders to improve safety.

↑ 5G will enhance live events



Entertainment

5G in stadiums, arenas and other entertainment venues will forever change the experience of seeing a live event. The technology will allow fans to connect and interact simultaneously on a mass scale. Additionally, venues will be able to offer enhanced fan experiences such as customized 4K video, alternate views of athletes and AR/VR streaming.

Mobile Gaming

Remember Pokémon GO? As players moved through the real world, Pokémon would pop up in a map on their Samsung Galaxy phones for them to catch. It made us feel like there was an entire world all around us that we could access through our phones.

That was a very popular application of augmented reality (AR), virtual reality’s less cumbersome cousin, and it’s only going to get better and bigger with Samsung Galaxy 5G phones on 5G networks. You won’t just be hunting down monsters on your way to the grocery store—you and 50 local players will descend on a park to battle with fictional enemies that you and all 50 players can only see through their individual phones, all synchronized, truly collaborating to battle together.

Public Safety

5G enables first responders to help more people in need while reducing risk for themselves. In Korea, fire-fighters are using 5G-connected drones to provide better access, coverage and visibility for people in dangerous situations like fires, earthquakes and floods from a safe distance. 🚒

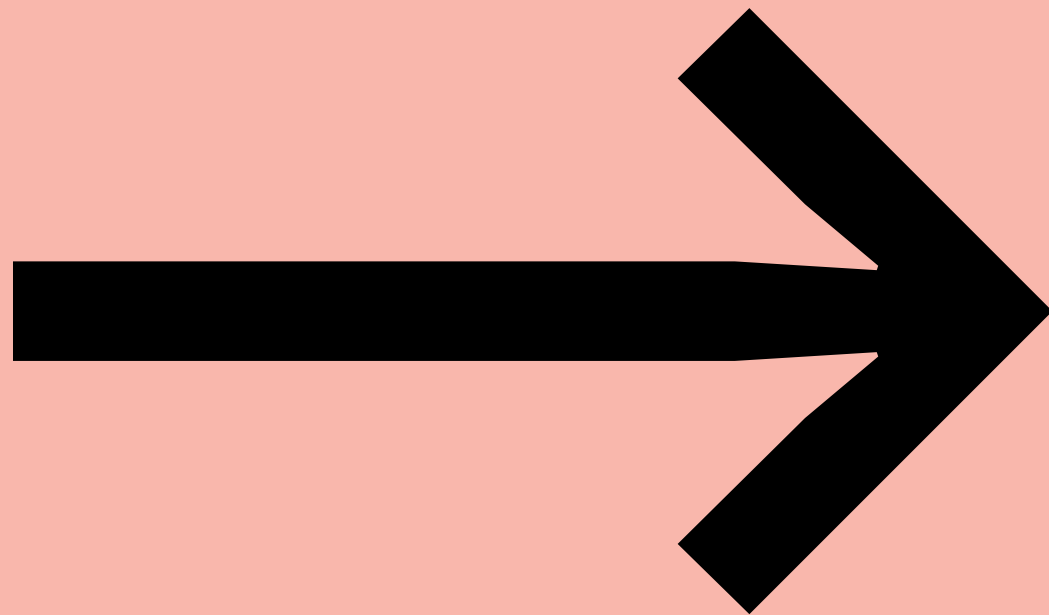
More:
https://ibm.co/industrious7_5G

← Woman plays with virtual reality

IBM's

Asma Shabab breaks
the rules to reveal how
tech impacts humanity

words: Justine Jablonska



52

→ Asma Shabab in Iceland





From Istanbul to Los Angeles, Dubai to New York and beyond, Asma Shabab—named a 2019 Woman to Watch for her thought leadership on how technology impacts humanity—is exactly that.

“Here’s to the rule breakers, the rebels and the transformers,” Brandberries editor-in-chief Hamza Sarawy, who compiled the list, wrote.

Shabab has always been a rebel, which she defines as continuously exploring how to challenge herself. At school, where she excelled in academics and extracurricular activities, she loved finding creative ways to address whatever was happening around her.

Today, in her globe-circling career, she defines rule breakers as those who have the guts to question.

“A rule breaker is someone who does things differently,” she told Industrious from her Dubai home. “Everything is possible if you’re ready to take the first step and go for it.”

She brings that ethos to everything she does—from her two master’s degrees (the first an MBA, the second in strategic public relations) to a career that has spanned marketing, politics, public relations, and now technology.

Throughout it all, she’s found that the way to make a difference is through questioning. Questioning existing processes; questioning whether there’s a different, better, new way. Also: listening.

“Can I listen from a different point of view?” she asks herself when examining a new challenge.

Shabab grew up in Karachi, Pakistan.

“It’s a city where there’s so much contrast in lifestyle, religious outlooks,” she said. “A city that houses so many people from all over Pakistan. It’s also a commercial hub. I love the energy.”

At her private (and “strict!”) Parsi high school, she was exposed to various religions through her fellow students—and notes how lucky she was to get that sort of exposure from an early age.

Since she was a talented artist who both painted and sculpted, her mother encouraged her to go to Paris to continue her art education. And though Shabab ultimately chose business as a direction, her art background has, throughout her career, helped her to bring a different point of view and creativity to her work.

The Institute of Business Administration in Karachi

“We need people who understand the impact of technology, and understand the responsibility.”

—Asma Shabab, IBM



had a combined Bachelor and Master’s of Business Administration. She decided on marketing as a focus.

After graduation, she worked in a state oil company as a management trainee. She soon realized how much she wanted to travel. She’d only ever traveled out of Pakistan twice.

“That was the North Star in my life,” she said—the guiding principle that today has her hopping continents.

She moved to Dubai, then to the UK. There, she became fascinated with the concept of public relations—“the embodiment of influence”—and applied for a Fulbright Scholarship to study strategic public relations at the University of Southern California.

“It was one of the highlights of my life,” she said. “There were students from literally every corner of the world.”

When the program ended, she returned to Pakistan to work in public relations with a focus on lobbying and politics.

She was reading *The Audacity to Win* at the time—David Plouffe’s inside look at the historic victory of Barack Obama, who she’d heard speak while at USC.

Technology, she recalls, was not really a driver in conversations yet. But once she finished the book, she realized that she couldn’t be an effective communicator if she didn’t understand technology.

Six years later, in her role as an IBM digital strategy and communications consultant, she works on addressing challenges and opportunities that come with implementing complex technologies like AI and IoT to make people’s lives better.

Though the learning curve was steep, she’s now

so well-versed in AI and IoT and their implications on business that she’s regularly asked to speak at conferences around the globe.

“AI is the way the world is going to work,” she said.

One of her favorite topics to speak about is AI bias and innovation.

“What systems are going to make decisions based on algorithms created by humans?” she said.

One way to combat bias in AI, she firmly believes, is to have more diversity among those who write the codes that make up AI systems.

Representation in tech spaces like AI and robotics matter, she said, but is currently missing from many spaces.

Shabab focuses on how technology is driving digital change. It’s why she became a consultant: to address how technology can impact sustainable development and impact global issues like poverty and education.

“We need people who understand the impact of technology,” she said, “and understand the responsibility.”

One of Shabab’s favorite trips among many in recent years was to Miami, Florida.

“We were in the middle of the ocean,” she said.

“There was a shipwreck. I jumped in. I wanted to see the shipwreck.”

And though swimming is a challenge for her (“I’m horrible at it, self-taught”), she welcomed the discomfort.

“You need to be comfortable in discomfort,” she said. “That’s the only way you’ll grow and challenge yourself, and ultimately succeed.” 🌱

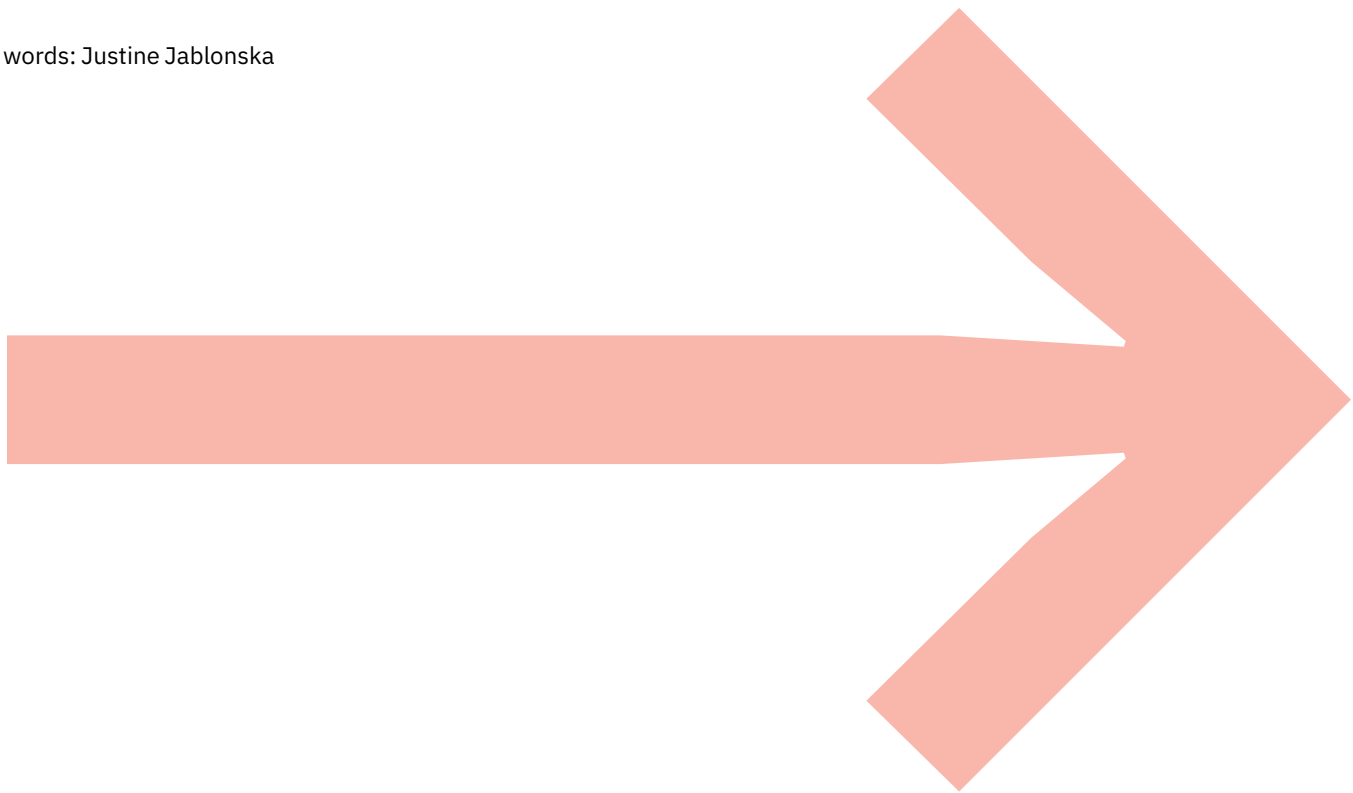
➤ Shabab in Machu Picchu



How the city of Stockholm broke its gridlock

Traffic levels went down, and stayed down, by 25 percent

words: Justine Jablonska





“It’s something people can feel every day.
It’s really making a difference.”

—Miro Holecy, IBM

In the mid-2000s, Stockholm city officials gathered to discuss a growing issue: traffic congestion. Sweden’s capital, located on ~75 square miles across 14 islands, is the nation’s political, economic and cultural center. It’s also the most populated area in the entire Nordic region.

At the time, Stockholm County’s population was expanding by 20,000 people annually. With more than half a million cars zooming in and out of the city, up and down the bridges and tunnels linking the city of islands, bottlenecks and delays were becoming ever present, with potential to get even worse.

Traffic, wherever it occurs, is nothing new. While not as old as the car itself, congestion in major urban areas followed soon after the automobile became widely available in the early 20th century. Traffic snarls, as they were then called, were lamented in news reports as early as the 1910s.

So when a century later, Stockholm officials decided to tackle the multi-faceted issue, they decided upon a road-charging system that included park-and-ride services and extended transit options. And they decided to kick it off with a pilot program that would run for six months starting in January 2006.

Gustaf Landahl was part of the Stockholm city government at the time, in the Environment and Health Administration.

“People everywhere are afraid of change,” Landahl told *Industrious* from Sweden. “So we tried it as a pilot first.”

The concept was simple enough: each Swedish-registered vehicle entering and leaving the city center between 6:30 a.m. and 6:30 p.m. on weekdays would pay a fee—the equivalent, then, of \$3.



↑ Aerial view of highway interchange



IBM was chosen as the prime contractor to design, build and operate the technical operations that comprise the traffic system, a first-of-its-kind operation of impressive complexity and scale.

Miro Holecy, an IBM Global Transportation CTO, was part of the IBM team. The process, he told Industrious from his Stockholm home, was complex.

“So many parties need to integrate,” he said. “You’re impacting city infrastructure that’s used every day.”

For the pilot, 18 roadside control points were strategically placed around city exits and entrances. When a car entered or left the control point boundary, one of two sensing mechanisms was activated.

The Swedish Road Administration issued transponder tags to Swedish drivers. Once installed, these triggered automatic payments when the vehicles passed through the control points. For cars without transponders, cameras photographed front and back license plates. The image was automatically sent to a processing facility for digitization and cross-check against vehicle registration data.

The optical character recognition software was a

technological breakthrough in and of itself, Holecy said. Since not all license plate imagery came through clearly, IBM Research developed an algorithm-based recognition system that mimicked the human eye, scanning nearly illegible text by moving the image around till the optimal viewing angle was found.

Data protection requirements were—and continue to be—an important part of this project, according to Holecy.

“We had to ensure that only cropped license plate images were captured,” he said, “that the transmission of images was secure and access to data was strictly controlled.”

According to polls, the majority of people—60-70 percent, said Landahl, were against the program right up till the moment it began.

“Some said it would fail. Others didn’t know what to expect,” Holecy said. “On the first day, many people stayed home.”

As time went on, “the people who drove, drove through the city much quicker,” Landahl said. “Those who took buses noticed they ran on time. People in the city noticed a difference in noise and air quality.”

↑ Man rides bicycle on city bridge

“The people who drove, drove through the city much quicker, those who took buses noticed they ran on time. People in the city noticed a difference in noise and air quality.”

—Gustaf Landahl, City of Stockholm

Public confidence in the system grew as traffic levels stayed down ~25 percent, surpassing the original targets of 10 percent to 15 percent.

“When you take a quarter of the cars off the street,” Holecy said, “congestion is gone. Taxi companies, which worried they would lose revenue, found they could move much faster.” Bus timetables were adjusted because traffic was moving so much faster.

An important part of the pilot included enhancements to the transit system.

“It was important to give people options besides cars,” Holecy said. Bus service was expanded. Parking spots were added outside the city so that people in more remote areas could leave their cars for the day.

After the pilot, the Swedish government released a referendum. Stockholm residents voted in favor—the first time any European residents elected to adopt a road charging system.

The government permanently relaunched the program in August 2007; it’s been running in Stockholm ever since.

In Holecy’s estimation, the way Stockholm went about the project made a big difference in its eventual success.

First came numerous studies. Then political consensus. Legislation was passed. And city officials regularly communicated to the public.

Communications about the benefits were especially important, Landahl said—not just about less traffic and reduced CO2 levels, but also about how the funds gathered would be funneled back into Stockholm infrastructure.

“The taxes went back to the people,” Landahl said.

The quality of IBM’s technical solution was an important part of the program’s success, according to Landahl.

“All of it worked correctly, from before the trial through the trial,” he said. “It worked perfectly.”

Over time, the original technology has evolved. The city is now using video analytics for license plate identification. Some of the tolling rules were adjusted. A few years ago, prices were raised, to no opposition, Holecy said.

More than a decade later, air quality is markedly improved. Commercial transport and logistics are easier. Emergency vehicle response times are faster. Revenue generated from the system is both put back into the

system for continual improvements, and also into city infrastructure.

One of the biggest benefits Holec, a Stockholm resident since 1998, has seen is an improved quality of life.

“It’s something people can feel every day,” Holec said. “It’s really making a difference.”

People are healthier by breathing less carbon dioxide. They’re less stressed because they’re not sitting in roadblocks.

“Congestion charging, if implemented properly,” Holec said, “can have a significant impact on society.”

Today, just five major cities around the world have active congestion pricing systems. Another Swedish city, Gothenburg, implemented theirs in 2013 following the Stockholm model. Singapore also worked with IBM on a pilot in the 2000s, while London’s system has been around since 2003, with IBM launching the transformed back-office system in 2011. Milan’s system was introduced in 2012.

New York is set to become the first US city as soon as Jan. 1, 2021.

Implementing congestion charging sets a good foundation, Holec said. Once that’s handled, cities can focus on other aspects of their residents’ lives. Less cars means more roads for cyclists, for example. Less cars also means less parking spaces, which can instead be used for recreational zones.

Holec urges governments to start with that kind of foundational thinking—because this scale of project directly impacts the quality of life.

Holec, a frequent traveler, was home the week he spoke to Industrious. His younger child has swimming lessons in the morning.

“Every morning we cycle,” he said, 5 kilometers there, and 5 kilometers back.

“Today I noticed how many bikes there were—more bikes than cars! I flew through the city. That’s how it should be.” 🚲





With sensors
in customers' cars,
Groupama Assicurzioni
is reducing accidents,
theft, fraud,
even speeding

words: Matt A.V. Chaban

◀ Vintage Fiat in Rome, Italy



When Groupama Assicurazioni began deploying smart sensors into customers' cars and trucks four years ago, the primary purpose was cutting down on theft and fraud by knowing where vehicles were at all times.

If policyholders opted into this IoT system—known in the industry as telematics insurance—they could receive annual premium discounts of 15 percent to 25 percent.

At the same time, Groupama discovered that knowing a vehicle's location and speed could reveal crashes in real time. If one appeared serious enough (50 or higher on a 100-point impact scale), dispatchers would contact the customer. If no one answered, emergency services were immediately sent.

On approximately 200 occasions a month, first responders are deployed, according to Groupama, arriving faster than they otherwise might have. This has helped prevent some injuries from becoming serious or even fatal.

Saving lives was only the beginning of the surprises from the telematics program, which Groupama Assicurazioni (the Italian affiliate of Paris-based Groupama Group) has branded as G-Evolution. The service has also helped customers navigate safer, more direct routes, reduce reckless driving, protect their vehicles from criminals and even keep an eye on their families.

"Usually, when customers are reaching out to insurers, it's because something unfortunate has happened," Emanuele Scarnera, head of finance and business development at G-Evolution, told *Industrious*. "Now, we can ease their trouble, or even prevent it."

Yet the most unexpected surprise may be how many policyholders in privacy-sensitive Italy signed up for the service: more than a third have opted in since the 2015 launch.

Some of this early adoption is attributable to the unique challenges of car ownership in Italy, particularly Il Mezzogiorno, the southern half of the peninsula from Abruzzo down through Sicily, where organized crime persists.

According to Scarnera, premiums in the Mezzogiorno are twice as high as those in the north, due to the higher number of thefts and fraudulent claims. And because the south is more economically depressed, with salaries 60 percent below the north, it creates an actuarial paradox: when people can't afford insurance, fraud and crime are more likely. That only further drives up insurance rates, leading to more crime, and so on.

The precise location of a vehicle helps with theft, but the moment-by-moment GPS detection underlying telematics insurance can also reveal even the most subtle frauds.

Beyond preventing schemes to falsify accidents and extract cash from policies, G-Evolution can tell if a customer who had a legitimate accident, maybe a head-on collision, then tries lump in previous damage, say to the rear bumper. Telematics data of the vehicle's precise movements at the time of the crash and in the past are fed into an algorithm and then combined with traditional inspection tools to help validate claims.

Pedro Bernardo Santos, the managing director of G-Evolution, believes telematics will overhaul the underwriting business. The historic work of risk protection and management will wane. "Thanks to new technology," Santos said, "risk prediction and risk prevention will be a big and growing market for insurers."

As Praveen Velichety, a digital and cognitive consulting lead at IBM Global Business Services who worked on G-Evolution, put it: "Gone are the days of traditional actuarial tables. Now we can rely on dynamic data for a dynamic world."

The offerings have grown alongside the growth in data. Groupama can now help customers navigate their routes based on weather patterns or road closures, and there is even a hope this could prevent crashes at some point. If G-Evolution's algorithm knows a certain driver likes to speed through a particularly crash-prone section of the A51 outside Milan, which is especially treacherous in the rain, Scarnera said the system could encourage the driver to slow down or even take a different route.

↖ Coastal road near Taormina, Sicily, Italy



↑ Cars in front of Supreme Court in Rome, Italy

G-Evolution has also attracted some unlikely power users: nosy, IoT-enabled parents. “We find they’re more relaxed and reassured, knowing their teenage children are where they say they are,” Scarnera said.

Such services would not be possible without strong data. This led Groupama to move its telematics operation in-house in April 2017 with assistance from GBS and a Watson IoT team in Rome.

“All the tools, all the data, all the mechanisms are now there to build cutting-edge services, whether preventing accidents, automating claims or nicer commutes,” Tiziana Tornaghi, an IBM cloud application innovation leader in Milan.

The social benefits extend to greater society, as well. G-Evolution is collecting data on potholes and other infrastructure problems, which Groupama plans to share with local governments. Such repairs both improve rides and prevent damage to vehicles.

And because good driving behavior is rewarded by lower rates, G-Evolution has demonstrated an impact on aggressive driving, with speeding and dangerous braking significantly reduced: according to Groupama data, at least 800 crashes have been avoided a year among G-Evolution drivers.

Thanks to the myriad features of telematics insurance, Groupama is on track to reduce claim expenses around 10 percent to 15 percent annually.

“We’ve changed the whole paradigm,” Simone Nardocci, G-Evolution’s chief technology officer, said. “Before, there was a lot of back-and-forth with customers. Now, we can get to yes or no much more quickly.”

The next evolution of G-Evolution should be even more dramatic, creating a platform that’s as much lifestyle concierge as driving assistant. And Groupama, because it has no interest in monetizing driver data beyond its closed platform, believes it can engender greater trust with consumers.

“We’re crystal clear what we do with the data,” Nardocci said. “We never use it for marketing or sales and keep it protected at all times.”

Imagine a connected car that is wired into your smart home and can tell not just if the oven is on or the washer is overflowing but can turn them off. The car then mentions a cappuccino sale—your favorite drink—at a coffee shop along an unfamiliar route. It could even help with proactive maintenance.

“Insurers are already helping us deal with the usual insurance risks in our lives,” Velichety said. “That’s earned them a lot of trust, so who better to help with our everyday needs, too?” 🚗

↗ Tunnel under Castle Hill in Gemona del Friuli, Italy



5G/Edge

76

Rob High
IBM Fellow, VP & CTO of
IBM **Edge** Computing



↑ Rob High

↖ Urban crowd from above



“Edge Computing is about placing work close to where data is being created and where actions are being taken.”

— Rob High, IBM

How do you define Edge Computing? Why should enterprise businesses pay attention to it?

Edge Computing is about placing work close to where data is being created and where actions are being taken. In other words, AI and analytics with lower latency, more efficient use of network bandwidth, better user experiences, higher protection of personal information, and enabling the continuity of business even in the presence of network outages.

All this enables businesses to innovate, lower operating costs and improve employee and customer engagement.

What’s the future of Edge Computing, and what’s IBM’s pivotal role in it?

There are a few problems that need to be solved to gain the benefits of Edge Computing.

We estimate there are 15 billion Edge devices currently in market—that will grow to 55 billion by 2022. Experts estimate that number will further grow to 150 billion devices by 2025.

5G will help fuel this growth, and Moore’s law of low-end chips is enabling it. Most importantly, we don’t know where the saturation point is for Edge Computing.

These are all core traits of IBM’s hybrid cloud and multicloud management heritage. We are leveraging openness and transparency.

The very same tradition of delivering and leveraging open source technology that led to the Red Hat acquisition is at the heart of our IBM Edge Computing offering, based on the Open Horizon open source project. We are working with a wide range of solution providers, hardware manufacturers, and systems integrators to build an ecosystem that gives our clients choice and enables us to build a strong value chain across our industry—while supporting enterprise needs.

What’s the relationship between Edge Computing and IoT? Edge and AI?

Edge Computing builds on the IoT tradition of connecting devices. However, as IoT devices have matured, expanding their functionality, it is now possible to transition from connecting and collecting sensor data,



We estimate there are 15 billion Edge devices currently in market—that will grow to 55 billion by 2022. Experts estimate that number will further grow to 150 billion devices by 2025.

sending it all back to the cloud and trying to make sense of it all there.

Edge Computing makes it possible to do IoT more effectively, more efficiently, and to unlock innovations that were previously not possible.

With Edge Computing, analytics and AI are placed directly on the device, local servers or in the network, moving the work to the data rather than sending the data back up to the cloud.

Besides telcos, which industries will be disrupted by Edge?

Manufacturing, Oil and Gas, Media, Retail, Travel and Transportation, Banking.

In essence, every industry will benefit from the transformative effects of Edge Computing, whether that's optimizing the performance of the production line; predicting the potential for equipment to fail before it creates a disruption to your operations; recognizing quality issues in real time; recognizing spillage or spoilage on the retail floor; protecting against theft and vandalism in the ATM vestibule; improving your driving experience and increasing road safety.

Any ethical concerns around the advent of Edge Computing?

A common concern is protecting our private and personal data. Edge Computing helps protect that information by avoiding the need to move that information.

With Edge Computing, we can move the work to our own device so as to reap the benefits emerging products are able to offer without our data ever leaving that device. Our personal information never leaves our possession; it is never sent back to the data center where it becomes a bigger target for others to attack. 🚫

← Airplane shadow over crowded beach

What's an AI-informed snack?

Cerealto Siro Foods

words: Michael Todd Cohen

82

➤ Cerealto Siro I+dea Center
Image via Cerealto Siro

→ AI-inspired pea and lentil snack
Image via Cerealto Siro





“I think we’re very close to a revolution related to how we produce our food,” Carlos Herrero, Digital Transformation Director at Cerealto Siro Foods, told Industrious from his office in Madrid.

Cerealto Siro has 17 production centers throughout the world, including Spain, Portugal, Italy, Mexico and the United Kingdom. The company sells over 400,000 tons of products each year and holds efficiency and innovation as central values.

“It’s lucky for us,” said Herrero. “We are a company that loves to implement technology, to implement innovation to improve. It is in our core.”

In June, the company announced its first AI-informed snack— a pea and lentil rice cake—had hit shelves in the UK.

“The consumer is going to demand new products, more personalized products,” said Juan Carlos Martinez, Director of I+dea (an innovation group within Cerealto Siro Foods). “The technology needs to adapt to continuous changes. Manufacturers have to adapt their production lines in order to produce these different products for different needs.”

AI-informed snacks, like the sugar-free rice cake snacks, are made possible through I+Radar—a new tool built in partnership with IBM and I+dea. The tool leverages Watson and the IBM Cloud to mine social media, scientific journals and magazines, among other sources, for what the public craves most in the food they eat. The tool can identify trends down to a hyperlocal level

and even associate ingredients with particular emotions.

Once deployed, I+Radar came back with results around a strong interest in low-sugar, high-protein foods and hearty grains like quinoa and spelt. Cerealto Siro then applied that data directly to the innovation process and finally to its production line.

“Customers want to be very healthy. Of course, this has impact in our work,” said Martinez. The results, he adds, “have been very, very good.”

In fact, Martinez believes the technology has fundamentally changed the way the team works.

“Since we launched I + Radar last year we have developed hundreds of ideas, prototypes or products inspired by the opinions of consumers, gastronomic blogs or scientific websites,” he said. “With I + Radar we have access within hours to millions of opinions, or information related to food, brands, products—something that we did not always do because it was such an effort in time and resources. Now, all this information is either improving products or becoming new ones.”

But the success wasn’t achieved through technology alone, according to Herrero. A view into industry knowledge around the business case and practical application of the technology was of paramount importance.

“We found that IBM could relate our technology to a real case,” he said. “The most interesting step of the process was the discussion with IBM people about how to create the model.”

↑ Juan Carlos Martinez, Director of I+dea
Image via Cerealto Siro



The results from I+Radar weren’t centered around ingredients alone. Data showed interest in sustainable and eco-conscious packaging and production as well, an area that Cerealto Siro intends to focus on in the coming years.

“We need to be a sustainable company,” said Herrero. “Working with food, it’s very important to have sustainability. This is critical for us: a real sustainable economy, including the supply chain from the vendors to the final product reducing waste and looking for zero waste.”

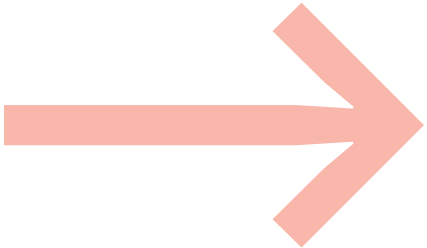
Within Cerealto Siro, Herrero points to simplification of process and collaboration across silos as keys to making digital transformation happen.

“To work together is more and more important,” he said. “In the last three years, I’ve started talking with people I’ve never talked with [before]. Maintenance people, R&D people. Ten years ago, you had many, many silos.”

On the heels of the development of the I+Radar tool and looking towards a future of breakthroughs in sustainability, Martinez believes there’s an essential ingredient the company has gotten right.

“You can create what people are going to need in the future,” he said. “But you need, of course, the right team to create that innovation, and this has been an example of that.” 🙌

↑ Carlos Herrero, Director of Digital Transformation
Image via Cerealto Siro



Influencer

86

Alec Ross
Technology policy expert

Alec Ross is one America’s leading experts on innovation. He is the author of The New York Times bestseller The Industries of the Future, and helps entrepreneurs, investors and government leaders navigate disruptive change across economy and society.



^ Rice field in Tukuyu, Tanzania

↑ Alec Ross

In your career, you’ve seen technology and innovation lift up communities across the globe. What is the most significant impact you’ve seen technology deliver to a community?

Sub-Saharan Africa has been transformed by technology in a very powerful and very positive way, principally through the end of its isolation: both economic and in terms of information. In Tanzania, for example, agriculture is essential for economic well-being, providing 85 percent of exports and employing 80 percent of the workforce. To stabilize the market and the wider economy, a 29-year-old Tanzanian computer programmer developed a mobile application called Grainy Bunch. It’s a big data tool that uses apps to monitor the purchase, storage, distribution and consumption of grain across Tanzania. Grainy Bunch took an ancient supply chain and brought it into the 21st century. Analytics are now being used to better manage a valuable resource and improve access to food and returns for farmers. The effect has been to stabilize the grain market and help stabilize the larger Tanzanian economy.

What is the greatest opportunity you envision in the next few years for technology to truly have an impact on our global society?

Our most precious resource is not money, it’s time. That may seem like a boring answer, but the honest truth is that increasingly powerful applications of technology will give us back months or years of our lives that were previously given to mundane, time-consuming tasks. Think about how much less time it takes to do research today now that we have the internet. Think about how much faster and more efficient our supply chains are because of the application of data analytics coupled with ubiquitous connectivity. The next few years for technology will take mundanity out of our lives at work and home and free us to spend that time more effectively and enjoyably. 🙌

More:
<https://ibm.co/Industrious7AlecRoss>



↑ General Assembly chamber at the United Nations in New York, NY



Banking on data to disrupt human trafficking

Data hub is helping expose
human exploitation

words: Justine Jablonska

Blurred motion of downtown
district commuters in Hong Kong

91



“If you can track the money,
you can track the people.”

—Anjuli Bedi, Associate Director of
Psychometrics and Predictive Analytics

That’s why John McGrath built the Traffik Analysis Hub:
to help financial organizations identify where human
traffickers are benefitting from trafficking, and ultimately
disrupt human trafficking networks at their source.

And he’s doing it through data: first gathering data at
scale, then using AI to refine and enrich that data.

“So that we can identify global hot spots,” he said,
“and identify where trafficking routes happen, what the
transit points are, what types of trafficking are prevalent in
different time periods and different locations.”

The global estimates of human trafficking vary precisely
because of the nature of the crime: the victims disappear,
uncounted and unreported. It’s estimated that around 40
million people are in circumstances of human trafficking in
a given year. The global revenue, meanwhile, is estimated
at around \$150 billion a year—making this the third-largest
and fastest-growing criminal activity in the world.

McGrath, an IBM senior solution architect,
began building the Hub in 2016. He was facilitating
a workshop in London for STOP THE TRAFFIK, a

global non-governmental organization focused on
human trafficking prevention. Attendees included law
enforcement agencies, NGOs and, importantly, financial
institutions. They all identified a need to share data.

McGrath found some relevant data sets online. He built
prototypes, and then worked with STT to build some more:
a map interface with hot spots, heat maps, markers. He
shared the prototypes in a follow-up workshop.

“We gave them a vision for how this system could be
brought together,” he said.

One of STT’s core goals is raising awareness of human
trafficking through providing a clearer look into what’s
happening on the ground globally.

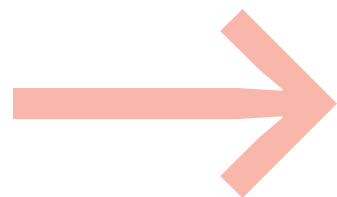
The work of McGrath and his team has transformed the
way STT works to achieve that goal.

“Everybody holds part of the story,” STT CEO Ruth
Dearnley said. “Whether the person in the village; on the
street; in the bank; or the person trying to prosecute and
arrest. We needed to bring those stories together, to weave
them into a tapestry that would show us a story bigger
than any one person held. IBM gave us that possibility.”



“Everybody holds part of the story. Whether the person in the village; on the street; in the bank; or the person trying to prosecute and arrest. We needed to bring those stories together, to weave them into a tapestry that would show us a story bigger than any one person held. IBM gave us that possibility.”

—STOP THE TRAFFIK CEO Ruth Dearnley





A crucial component of that story is money. It's estimated that one percent of criminal proceeds from trafficking are confiscated or disrupted, according to financial crime expert Geraldine Lawlor.

"That is an extraordinarily high profit margin and why it is so lucrative to those involved," she said.

McGrath and his team are working with financial institutions for that reason: if you follow the money, you can also follow the flow of humans being trafficked. Money laundering is a prevalent part of human trafficking, so they're identifying patterns of anomalies in transactions related to laundering.

"We're starting to identify patterns developing in specific locations for specific types of transactions, and for specific types of trafficking," he said.

That's something financial institutions have never had access to before: pooled data from multiple sources—NGOs, publicly available news via AI and other peer financial institutions. That gives them a view beyond their own internal horizon. Which, in turn, allows them to better focus the microscope.

In the Hub, each authenticated participant gets access to a map interface, news explorer, and analysis register.

The map is important, because it generates hot spots based on different representations of data. That data has come into the Hub through various ways; including NGOs like STT sharing their own manually curated data with

McGrath. AI engines, including IBM Watson, are another source.

Consumers of the data include law enforcement agencies: "They pull the data offline and do forensic analysis on it," McGrath said.

At STT's office last month, McGrath walked me through the Hub. On the map interface, he clicked through various menu items.

"These are clustered markers," he explained. "They give us a count, intensity color and time period. We're looking at the data we have from Watson, Google Earth and the NGO community."

McGrath pointed out clusters of intensity in the Indian subcontinent and the UK.

"If we were to zoom in and break these clusters apart, we can see some of the raw data behind them," he said.

The Hub doesn't store any personal or sensitive information. The data is stored in the IBM Cloud, and because it's non-specific, the jurisdiction in which the data is located isn't an issue.

McGrath clicked on another part of the map.

"An additional important feature here is the location type," he said. "In this case it's a transit point."

McGrath zoomed into a transit point related to an event that occurred in Romania.

"The source of the incident is Romania, and it's connecting to both Dublin and Northern Ireland," he



said. "When you look at the detail behind this particular incident, it's people being trafficked into the agricultural business in Northern Ireland via Dublin."

On the screen were lavender dots, crisscrossed lines. They connected across cities, countries, continents. Humans, being bought and sold and moved.

NGOs like STOP THE TRAFFIK have never had this kind of information before: stories being woven together into a more complete picture.

"This system can tell you where the transits and the sources are," McGrath said. "You can find out which other partner NGOs have more detail, or more data and specialty in the sources. So you can form collaborations."

McGrath is working on a prototype for financial institution data so that banks too can collaborate and share data. The prototype is based on red-flag indicator data for transactions that have exceeded the Thomson Reuters Foundation rules. The non-attributed data doesn't contain specifics around entities or persons. It does tell when the transaction occurred, the rule or trigger it fell afoul of, the source and destination cities.

McGrath uses this kind of data to do a proximity correlation.

"We can overlay for a particular type of trafficking and a particular period in time," he said. "The financial anomaly data can be overlaid with the heat map of the incidents from the NGO community."

The Hub highlights particular patterns in the financial transactions. McGrath demonstrated a transaction pattern flowing from Dublin through to Lagos. It's highlighted because of physical proximity to an old hotspot for trafficking. With this capability, the Hub is providing financial institutions with a notification that, in the haystack of potential transactions, this one may be where the needle is located.

"Where did they go? How? Who gave the money? Who took their passport? What borders did they cross?" Dearnley said. "With IBM we've begun to build that data, identify patterns, identify hot spots."

The next milestone McGrath is working into the Hub is projection: looking at patterns in the data that exist historically, and seeing if those patterns are being repeated in real time. One day, perhaps, the Hub will be able to project what may happen in the future.

"The transactional information is real time or near-real time," McGrath said. "If we can identify past patterns when known events occurred, we can possibly match those patterns to what we're seeing developing right now. Which may give an indication if something's occurring right now that we're not aware of yet." 📡

↑ Shinjuku Station at night in Tokyo, Japan

↑ Blurred motion of crowd in market at night



Cyber security in the age of OT transformation

words: John Zorabedian and Anshul Garg

“The reality is that most organizations
have low cyber security awareness
and a heavy reliance on physical security.”

—Rob Dyson, IBM

Power plant pipelines in
Jiangxi Province, China



They sound like scenes from a Hollywood blockbuster movie: a cyber attack on a power plant causes the lights to go out. A destructive attack sabotages industrial equipment to incapacitate a manufacturing facility. Attackers infiltrate the control systems of a dam, nuclear plant or medical facility with the intent to cause physical harm to populations.

Once the stuff of science fiction, these scenarios are no longer so far-fetched.

In 2015, nation-state adversaries caused widespread blackouts in an attack on a Ukrainian electrical grid. Nearly a decade ago, the Stuxnet worm destroyed centrifuges in Iran's nuclear program. At Black Hat 2018, IBM X-Force researchers demonstrated how vulnerabilities in an IoT gateway could have allowed attackers to access controls for a dam sluiceway, causing a flood.

Mindful of the need to remain competitive in a digitizing world, public utilities and industrial companies have, in recent years, taken advantage of digital transformation by merging IT with operational technology (OT) systems. These smart OT systems offer the promise of automation and increased efficiency and productivity, but as with any digital transformation, challenges can arise.

According to Rob Dyson, Global OT Security Services leader at IBM, organizations are just beginning to reckon with the lack of OT security.

“While a handful of organizations have some defined security processes for OT environments,” Dyson said, “the reality is that most organizations have low cyber security awareness and a heavy reliance on physical security.”

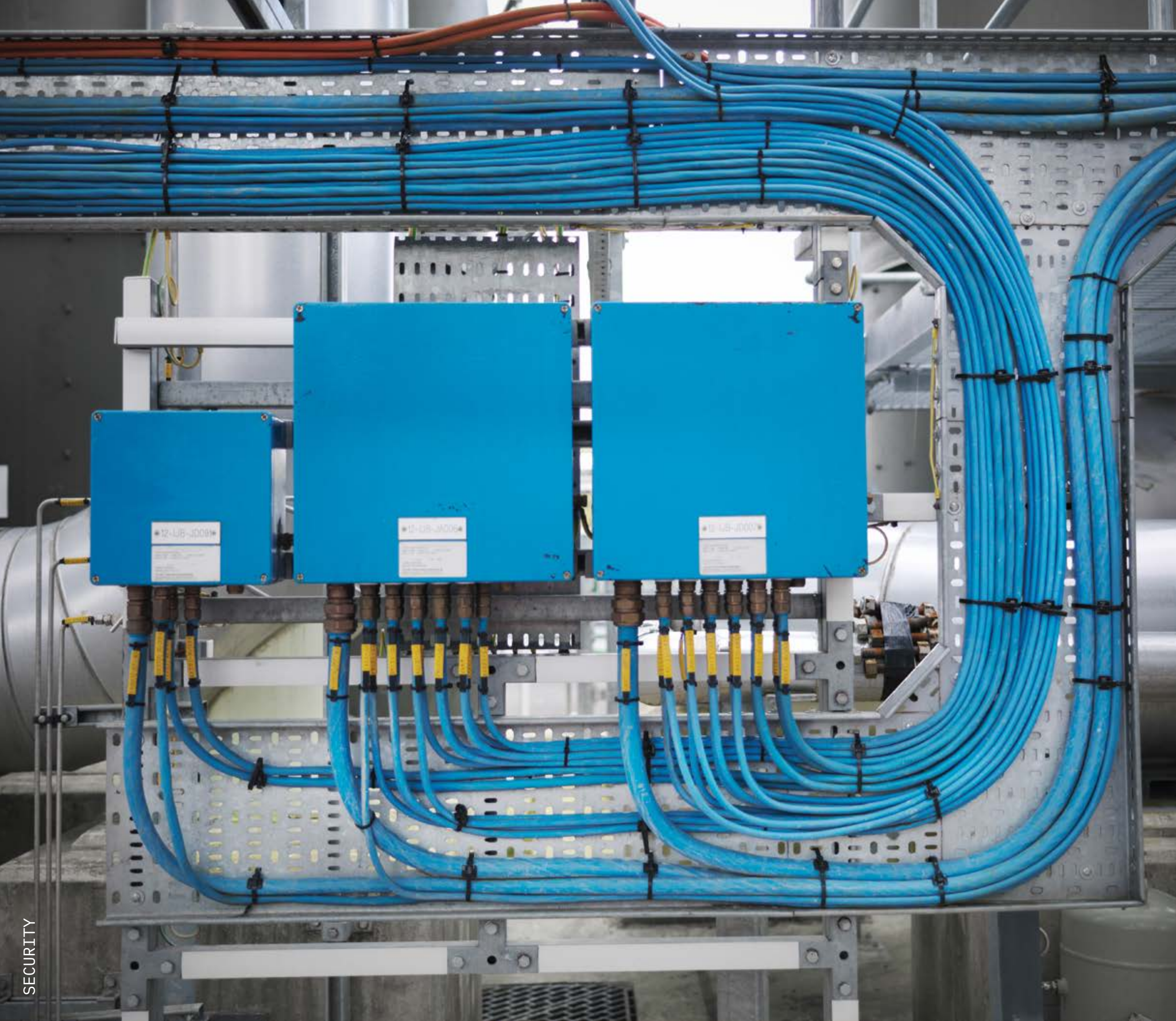
One organization he consulted, for example, simply disconnected from its network when it came under cyber attack. Lacking an established plan to deal with a cyber incident, the organization decided it had no choice but to shut down everything to stop the attack. But going offline can be financially damaging due to lost productivity and lost business—whether it's a destructive attack that knocks a business offline or the company makes that choice for itself.

Dyson said that security challenges in the OT environment are unique. The key difference is the typical IT security KPIs of confidentiality, integrity and availability are not fully relevant in this space. With an electric utility, for example, confidentiality of information is not of primary concern, but keeping the lights on is.

OT teams also haven't traditionally needed to consider cyber security—when OT systems were not connected to the internet, the odds of a cyber attack were slim. The majority of OT teams likely do not have a consistent, measurable cyber security program as part of a strategy to mitigate risk. Disjointed IT and OT teams make the situation even more challenging.

The risk of an OT attack, while still low compared to typical cyber security attacks, leaves little room for error.





Destructive attacks of the type that can disable traditional IT and industrial systems are far costlier than the average data breach.

According to an August 2019 report from IBM X-Force Incident Response and Intelligence Services, destructive attacks increased by 200 percent in the first half of 2019. And destructive attacks cost companies an average of \$239 million. Half of the destructive attacks studied by X-Force were in the manufacturing industry. Destructive attacks also significantly target the oil and gas sector.

And though there's increased urgency for industrial organizations to secure their OT, many are starting from scratch. One European energy and utility company wanted to increase the robustness of their supervisory control and data acquisition (SCADA) network, and asked IBM for help.

Due to the extreme criticality of the processes and the systems, the company wanted to identify weaknesses in their security processes and find vulnerabilities inadvertently created by employees. But taking systems offline for testing was not an option.

IBM tailored a series of security tests to simulate a real attack. IBM consultants were able to take control of many systems, including the SCADA application that could control the OT environment. While the test uncovered serious security holes, the result was positive because IBM penetration testers caught the issues before potential attackers did, allowing the customer to work with IBM to create a road map and prioritize investment.

"One of the most powerful things we've come to understand is that every client is on their own unique OT security journey," Dyson said.

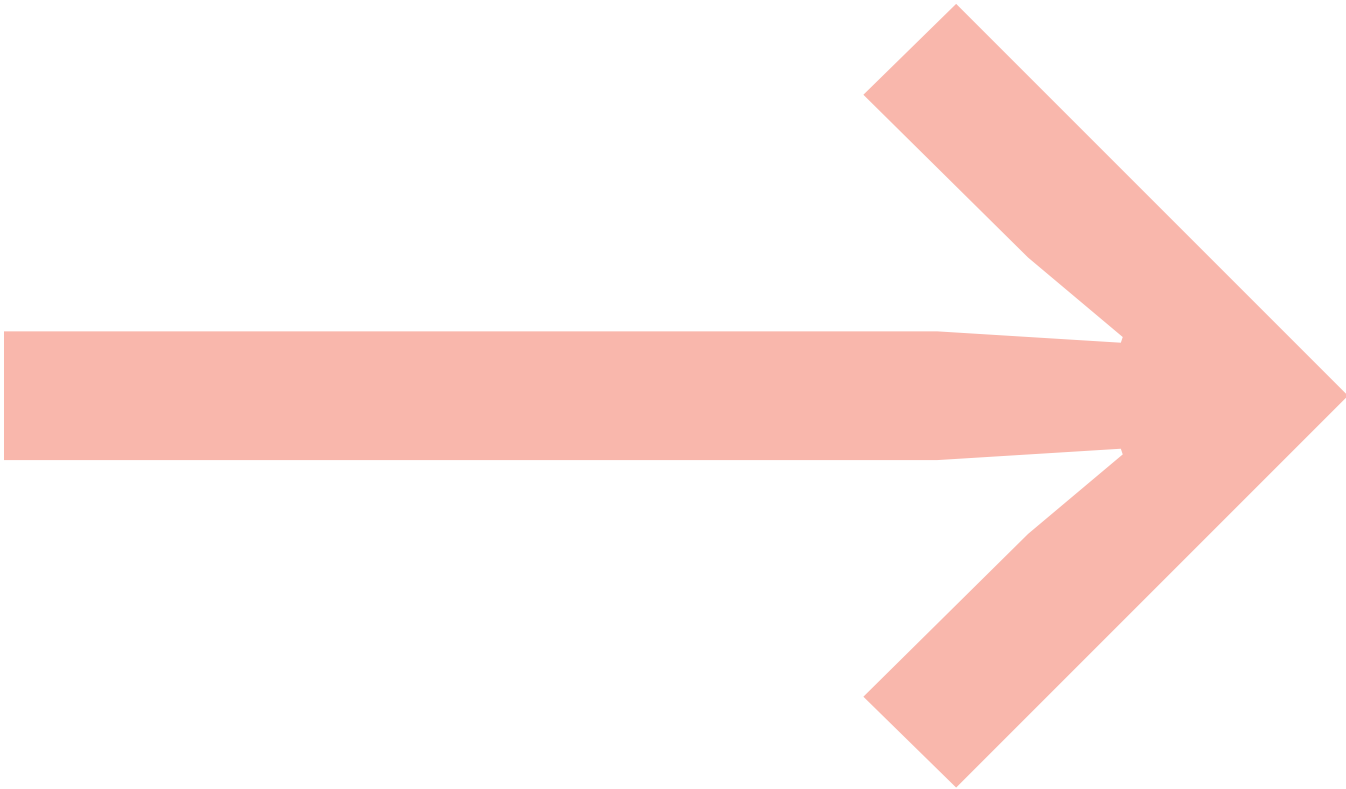
Moving from an ad hoc, reactive approach to a fully optimized, automated and proactive OT security program doesn't happen overnight. It requires sustained planning, investment and recalibration.

"Some of our clients are putting the final touches on their maturity program, while some are just getting started," Dyson said. "They have one thing in common—they all want to improve their security program."

Do you know the cost?

Climate change equals
water change

words: Justine Jablonska
photos: JP Lespinasse





A red cotton t-shirt:

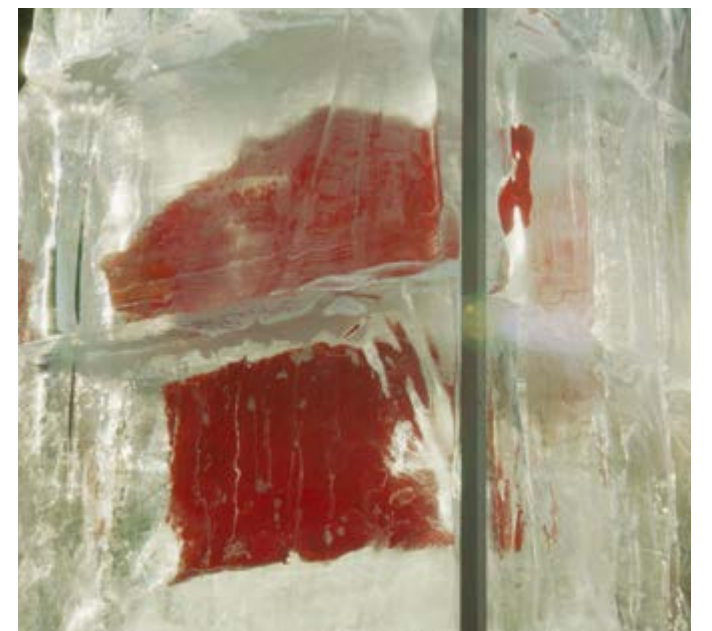
700 gallons of water

An eight-ounce steak:

920 gallons of water

Espresso, milk and cup for a latte:

126 gallons of water





A soccer ball. A coffee cup. A plastic toy. All frozen in blocks of ice along a lake in Atlanta, Georgia.

“Everything we use, buy, sell, eat takes water to make,” IBM Global Creative Director Mark Fredo told *Industrious*. That’s why, on World Environment Day, he and his team froze everyday items in the amount of water it takes to create them.

The ice stunt was part of *Forecast: Change*, a new IBM-The Weather Channel initiative to help combat freshwater scarcity around the world. The installation was created specifically to drive awareness—because it’s difficult for people to connect how an individual, local action can impact a global problem, according to Fredo.

“Everything has a water cost,” he said. “When we know the cost of items we use every day—handbags, jeans—then we’re conscious of how we can make ethical choices.”

Know the cost means exactly that.

A red cotton t-shirt: 700 gallons of water.

An eight-ounce steak: 920 gallons of water.

Espresso, milk and cup for a latte: 126 gallons of water.

Meanwhile, more than two billion people around the world lack access to safe water. In the next five years, two-thirds of the world’s population could be living in water-stressed areas, the United Nations estimates.

“As the planet warms,” Fredo said, “we’re seeing a compromised ability of the planet to sustain clean water. Climate change equals water change.”

Forecast: Change includes partnerships with NGO *charity:water* and *The Nature Conservancy*.

“IBM is giving away a million dollars in clean water this year,” Fredo said. “\$500,000 in cash, \$500,000 in kind.”

The ice blocks melted in various stages throughout the day—the plastic dinosaur finally freed from its icy cage. The melted water was filtered and channeled into a drinking water fountain.

Fredo’s team also created a Chrome Browser extension. ibm.biz/knowthecost helps users learn the water cost of their online purchases.

It’s not a war on commerce, he explains, but an understanding of consumption.

“It’s about connecting the dots,” Fredo said.

“What’s the one action you can take?” 🐼

More:

TheWaterChannel.org

Quick

10 leaders of industry
answer the question:



What inspires you
about technology?

I'm inspired by how transportable technology is becoming, allowing us to bring computing power and connectivity where they're needed. Think of how we can now monitor and assist emergency workers through something as small as a watch. Or how the team from project OWL created an emergency communication network with the equivalent of a bunch of hi-tech rubber ducks—once this network of “ducks” is deployed in a disaster area and then clustered, civilians are able to get on the devices through a really intuitive interface and contact first responders.

—Jerry Longyear, CMO
IBM Government, Healthcare & Life Sciences

Technology might seem an unlikely source of inspiration, a feeling more often represented in art through the iridescent colors of a summer sunset. For me, technology provides inspiration across all our senses—it inspires the what if, and that possibility extends beyond sight or sound. In my work in Hybrid Cloud I've been especially inspired by the potential of technology to do good in the world, whether housing terabytes of data that help nations better predict natural disasters or beaming distance-learning to children who might not otherwise have access to it.

—Memsy Price, Editor-in-Chief
IBM Hybrid Cloud

110

→ Pink spotted bokeh light background

Takes:

When technology enhances experiences and helps us stay connected with family and friends, that's a win for me. Technology helps make travel less stressful, shopping more personalized, and staying in peoples' lives easier than ever. Across each generation, from parents to kids, technology is leveraged differently, but equally critical.

—Cheryl Caudill, CMO
IBM Consumer Industry

What inspires me greatly about technology are not just the possibilities, but most importantly the impacts. With intelligent technology use, you can do anything: from playing a simple game to remotely operating an offshore oil platform; from improving energy efficiency when manufacturing cement to making heavy industries more attractive to millennials; from tracking responsibly sourced cobalt in Congo mines to capturing the expertise of an aging workforce; from ordering cement on a mobile app to finding gold reserves faster; from advising farmers on the best type of fertilizer, and the best time to apply it; all the way through improving worker safety by identifying and eliminating hazards in the workplace.

—Manish Chawla, Global Managing Director
IBM Natural Resources Industries

The most remarkable technology is about creating platforms for positive change. It's been eye-opening to see how healthcare companies are creating better insights for proactive care; how transportation companies are using predictive analytics for employee safety; how digital commerce platforms are leveraging blockchain to bring rural communities into the global economy. We're seeing inspiring and innovative stories like these surface

regularly. Truly, technology can elevate the purpose of teams, organizations and movements.

—Michael Fasciano, Editor-in-Chief
IBM Services, GTS

Technology continues to amaze. Today your phone can charge my phone, but it's the world-changing results that inspire. I've been blessed to be part of projects that mapped the human genome, simulated the nuclear stockpile, won at chess, built e-business into a commerce platform, commercialized open-source, used analytics to make smarter cities, and transformed telecom networks for unimagined 21st-century applications. Nothing is the same as it was yesterday, and I'm so looking forward to what tomorrow brings. I don't want to miss any of it. Now that's inspiring.

—Richard Michos, CMO Global & North America
IBM Telecom, Media & Entertainment;
IBM Energy, Environment & Utilities

Technology gives you the ability to accelerate anything you apply it to, whether it's the ability to better understand your structured and unstructured data, or providing better customer services by empowering your employees. When technology and humans work together in the right way, that's a powerful combination that can solve any problem.

—Stephen Leps, Editor-in-Chief
IBM Services, GBS

It’s all about mobility and having the opportunity to work from everywhere you want.

–Maria Cotarcea, Global Marketing Leader
IBM Travel & Transportation; IBM Energy,
Environment & Utilities

Technology is evidence of humanity and its ingenuity; it’s had significant impact on societies, people and our planet. As technology evolves, so do we. In healthcare, new technologies such as AI, blockchain, high-performance computing, and new data provide us a window into the human genome, into populations and new medicines. I firmly believe that it will be through technology that local organizations, communities and regional initiatives will ultimately create collaborative care models to allow healthcare services to become more accessible, equitable and relevant to everyone’s lives. And that, as our chairman describes, is IBM’s moonshot. We can and will make a difference.

–Susan D. Noack, Global Industry Executive
IBM Healthcare & Life Sciences

Technology is only inspiring if it can advance a business benefit. If I am a bank, technology needs to empower my employees to delight my customers and provide an experience that exceeds their expectations. Technology enables the banking industry to perform at its peak if implemented correctly and used smartly. Shareholders and bank customers don’t care about the plumbing, as long as water runs. Technology needs to make sure it flows.

–Robert Mercorella, Global Industry
Marketing Lead
IBM Banking and Financial Markets



“As we look ahead
to how businesses
construct their
organizations for the
future, an accelerated
approach is key.
It’s time to do business
in a different way.”

—Juan Zufiria

