Global industry stories for the

Industrious.

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Sharon T. Driscoll
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The Industrious mission: In an age of exponential technology, 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.

This issue of Industrious marks our fourth. We now have an entire year's worth of industry stories centered around the convergence of technology and human potential.

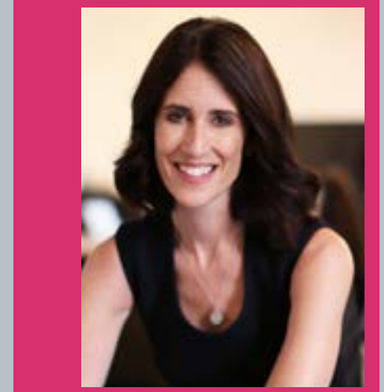
To me, the best way to celebrate the many stories we've shared is to widen the aperture even further, and both highlight and explore how inclusion and responsibility can transform the way we work and live.

It's not enough to use or build technology without examining the biases we have as humans. Nor is it enough as humans to conduct business without a sense of responsibility for the global community at large.

Here, we highlight a world in which innovation and inclusion can happen at once and as a function of each other, with articles like In an emergency, every second matters, a profile of out-and-proud CTO Charlotte Wang, and What we don't talk about when we talk about AI. This is a world in which inclusion fuels and inspires innovation.

Whether you're in telco, manufacturing, travel, government, banking, security, or any other thriving sector, I hope this issue inspires you. When we focus on lifting each other up, we can achieve far more than what we thought was possible.

Michelle Peluso
Senior VP & CMO, IBM



In 1953, before the internet, before social media, before big business took a bold stance on societal issues at large, Thomas Watson, Sr. made a statement to the world by declaring that IBM would always "hire people who have the personality, talent, and background necessary to fill a given job, regardless of race, color, or creed."

The world is a different place than it was in 1953, or 2000, or 2011. As the world has changed and business has changed, skills and professions have changed just as rapidly. In order to introduce technology into the world in a responsible and non-biased way, we need to ensure a diverse and inclusive workforce is building that technology.

It's our job to mirror the world for our clients.

You might think it's strange that I'm talking about diversity and inclusion through a story of a Caucasian man from the 1950s. The fact is, men still control 80 percent of board seats, 92 percent of Fortune 500 CEO roles, 75 percent of tech jobs, and 75 percent of upper management jobs. We simply won't bend the curve on diversity and inclusion unless the men in these positions make it just as much of a priority as any other business imperative.

This issue of Industrious explores the stories that unite us through technology and inclusion—such as women of all stripes bringing ethics to AI, a Digital Transformation lab that builds manufacturing skills in the next generation, and a profile of an out-and-proud CTO.

If we believe it's a business priority, we can accelerate like never before.

And it can start with you.

“At the highest level, AI is about helping us be the best version of ourselves as humans.”

Artificial intelligence and ethics: a conversation

Written by Justine Jablonska
Adam Cutler
IBM Distinguished Designer, AI Design
Milena Pribić
IBM Designer, AI Design

Read the full Everyday Ethics for AI guide:
ibm.biz/IndustriousMagEthics

AI is everywhere: chatbots, processes, apps we use multiple times a day. It has enormous potential to improve our lives—and carries tremendous responsibility for those who design and develop it.

Industrious spoke with the IBM team that published a framework for designers and developers on AI ethics in September 2018.

Everyday Ethics for Artificial Intelligence is digestible, actionable, and organized around IBM's Principles for Trust and Transparency: accountability, value alignment, explainability, user data rights, and fairness.

Where are we with understanding the implications of AI?

Cutler: I think it's still fairly rudimentary. It's this fuzzy idea of promise and threat rolled into one.

We may have moved some folks past the "Terminator" / "Matrix" issue, but people don't necessarily understand where AI is going to fit into their lives even as it's inserting itself into their lives. Right now, there's a fear-based perspective: this is going to take your jobs, or obviate your professions, or aspects of your professions.

AI is not easy to see, unless it's a consumer AI like a personal assistant, a chatbot with a certain degree of agency within a sandboxed system. It's all amorphous and you can't touch it or point at it, besides the cylinder on your kitchen counter.

I think we'll see profound larger-scale effects in areas like oncology research, financial markets, or oil and gas.

What are the biggest opportunities for AI?

Cutler: At the highest level, AI is about helping us be the best version of ourselves as humans.

In the same way that other tech revolutions helped us master our own skills and environment—simple things like electricity and indoor plumbing fundamentally changed the nature of humanity in how we live our lives. AI will be as far-reaching. We'll look at this period of time in the same way we moved from gas lamps to electric; a public well versus turning on the tap.

It's game-changing. AI's big promise is that we're going to have mastery of ourselves, what we know, the environment where we live, in ways we're just starting to imagine.

What about the risks?

Pribić: People are starting to understand that the subliminal, almost invisible aspects of AI do have intense repercussions. The decision-making is happening on the backend, where you can't see it. That is a cause of concern.

How did this guide come to be? And why "everyday"?

Pribić: I was working on a team developing an AI tutor for K-12 students and designing personality into that tutor. That meant making sure the tutor was empathetic to a student going through specific scenarios, encouraging the student, reflecting their emotions to make it an authentic, genuine interaction.

We noticed a big effect on the users—a positive one. It got my team and I thinking about the ethics of reflecting and understanding emotion.

I reached out to Adam, who had already been riffing on this topic.

Cutler: At that time, I was getting a lot of requests to put out a point of view on AI ethics, but I was hesitant. I'm a designer, not an ethicist.

When Milena reached out, we jumped on a call with IBM Research's Francesca Rossi, our AI Ethics Global Leader, and Anna Sekaran, AI in Academic Initiatives & Public Affairs Program Lead. They said: "It would be great if you could create an AI ethics manifesto that would be short, sweet, and to the point."

We came away from that meeting energized. I did know I didn't want it to be a manifesto. Milena and I wanted to create something people could use every day. It needed to be non-threatening, so you could find your way into the material, and it made you smarter than before you picked it up.

Our approach was to explain the core elements at the most basic level and provide three very distinct and easy-to-digest sections: recommended actions to take; things to consider; questions to ask your team.

We also came to realize that it was necessary to have a running example throughout. Lots of people really click with that "for instance" bit. You go from philosophical / theoretical / ideal to "this is what it looks like when you're actually working with your team."

Originally the guide was for designers, but with subsequent rewrites, we made it for designers and developers—not separating them out but approaching the subject as a shared responsibility.

What responsibility do humans have to the machines they create?

Pribić: We have a responsibility to those using the machines. Machines don't come with their own set of values. We instill those values into the machines. The machines reflect us. That reflection should be as ethical and inclusive as possible.

Cutler: We are accountable for the machines. We owe it to ourselves to raise them humanely. There are lots of parallels between training AI and raising a toddler. Both have some natural language and some ways to understand the world around them with their tool sets, but without any direction, neither knows how to apply itself. An AI needs to be taught what is ethical and what is unethical.

A child's understanding of right and wrong starts with big GOOD and big EVIL; this is bad behavior, this is good. Then, you get into subtleties—it's not always like this all the time.

We don't have examples of AIs that have been trained long enough to have a better sense of who we are. The question is: how would we know they have a sense of who we are? Do we understand what they know about us? And can we understand how they got to this understanding? Do we know what their reasoning is, and do they truly understand this?

Have you had conversations with people who have applied these learnings?

Cutler: Ellen Kolstø, an IBM Research design researcher, teaches at the University of Texas at Austin. She introduced the guide to her current class during its last session. They'd been coming up with ideas for the semester. She asked her students if they would change anything after reading our material.

What happened next took Milena and I by surprise: not only did they think differently about what they'd been working on, but rather than acting as a limiter, the guide was generative. They created new ideas on how to apply AI to solve problems in adjacent spaces to their original ideas.

We're excitedly waiting to see how it plays out in products.

Pribić: It's changed the nature of my work for me. You can't unlearn it. It's part of the process now: understanding the implications of everything you're putting forth.

Where will the conversation on ethics in AI go in 2019?

Cutler: It's going to be a continuation of the conversation. Ubiquitous as the discussion on AI is, working with it isn't a straightforward process.

Training a machine can be a lengthy process. We'll start to see things play out as teams orient themselves within a solution. People are starting to sort out how to apply this to a business unit. The more we see people deliver real, in-market use of AI, we'll see more of this conversation take center stage.

Ethics is an area where people don't pay attention until something goes wrong, and then they try to apply ethics retroactively. That's part of our motivation. We want to give people something to be proactive with.

Pribić: We're in this phase where there's a lot of pushback, where you see a company or group that hasn't thought about it.

As that conversation keeps evolving, we'll find more innovative and exploratory ways to address ethics.

Grey areas matter. We'll keep talking about how to start tackling those as well.

With IBM partnership, USC fills the manufacturing skills gap

Written by Jordan Teicher

USC civil engineering major Andrea Ogunleye, center, conducts field work as part of a research project to improve rural internet accessibility in South Carolina.

An education in manufacturing isn't what it used to be.

In years past, said Hossein Haj-Hariri, the Dean of the College of Engineering and Computing at the University of South Carolina, aspiring manufacturers learned the fundamentals of mechanics, materials, and machining. More recently, they added robotics to their tool set. But today, he said, "the picture is completely different."

Now, manufacturing environments are more interdisciplinary, and more technologically complex, than ever before. Artificial intelligence, cloud computing, and the Industrial Internet of Things (IIoT) have fundamentally reshaped the way things are made and maintained.

"You can be a world-class computer scientist and potentially become a manufacturing engineer. You walk on a shop floor and 80 percent of the work is programming and getting these systems to communicate with each other," he said.

The next generation of manufacturers needs to have experience with new technologies and new ways of working as early as possible to be successful in the modern workforce. Universities, in partnership with technology companies, can provide that competitive edge.

"As technology progresses, we still have only four years to take students from high school and turn them into engineers. So what do you do as you have to teach them more and more?" he said. "They have to learn the fundamentals. But you want them to get into some impactful experiences."

In the past few years, the University of South Carolina has made some important steps to provide those experiences.

In 2011, it founded the Ronald E. McNair Center for Aerospace Innovation and Research to support industry through aerospace education and research leadership. Five years later, it opened the Center for Applied Innovation and Advanced Analytics—a public/private partnership between USC and IBM—where university faculty and students, along with IBM researchers and private sector researchers work collaboratively to research industrial applications for cutting-edge technologies.

This September, the university created a whole new set of opportunities when it opened a new 15,000 square-foot Digital Transformation Lab. There, students and faculty will work with corporate partners, including IBM, Samsung, Siemens, and Yaskawa to develop research projects with an array of real-world industrial and consumer applications. With Samsung, they'll work on smart home appliances. With Siemens, they'll create industrial robotic simulations and predictive maintenance projects. With Yaskawa, they'll apply AI and machine learning to improve advanced manufacturing processes.

Displayed in the lab for potential customers, the projects will highlight the benefits of matching university research expertise with the latest in private sector technologies. They'll also present students a leg up as they begin searching for jobs.

"The students who work on these research projects are well-positioned to find the kind of rewarding, high-paying jobs that contribute so much to the state," said USC Office of Economic Engagement Director Bill Kirkland in a USC release.

Andrea Ogunleye, a civil engineering major at USC, is already benefiting from the public/private partnership between the university and IBM. Growing up in Nigeria, she often accompanied her father, a civil engineer, when he did his field work. This summer, she did her own field work—donning a hard hat and inspecting microwave towers—as part of a team of cross-disciplinary students researching how to improve rural internet accessibility in South Carolina.

"I actually hadn't gotten the chance to do on-site work since I went to college," she said. "It was awesome to be able to get back into that."

Today, according to the Federal Communications Commission, about half a million South Carolinians don't have internet access in their homes. In partnership with South Carolina Educational Television (SCETV) and IBM, USC developed a plan to bring those people internet by mounting equipment on old radio towers, water towers, and fire towers.

As part of their research, Ogunleye and the team correlated a map of areas in the state that lacked connectivity with a map of existing tower infrastructure to determine how to provide coverage for the greatest number of people. Eventually, they'll be able to use IBM Maximo to manage all the physical assets on a common platform. And ultimately, they hope to use Watson Visual Recognition to identify similar solutions for populations lacking internet access nationwide.

For Ogunleye, the ongoing project is a unique opportunity to engage with the kind of cutting-edge enterprise software she may one day be called upon to use in the workplace. For IBM, meanwhile, it's an opportunity to apply university research to a pernicious local issue with massive industry applications.

In Haj-Hariri's view, those kinds of mutually beneficial relationships will move both industry and the university forward, and keep them both on the cutting edge as the manufacturing field continues to shift.

"The really long-term goal is to create an environment where our college is always at the forefront of whatever technology comes to the table. We want to be there in partnership with industry partners, the state government, and the federal government to come up with best solutions and the best opportunities for our students," he said.

VW is creating the driving experience of the future

Written by Karam Sethi

Driving down a street in Berlin, Christoph Hohmann, Head of Customer Engagement and Communication at Volkswagen, beamed as he spoke with Stefan Schumacher, Director for Global Automotive Industry at IBM, about the future of mobility. The reason for his excitement wasn't a new fuel source, way of driving, or car model. It was an app.

"See this huge screen here?" he asked Schumacher, who sat in the passenger seat. "This is where we will integrate We Experience."

We Experience is a new way for drivers and their passengers to relate to their vehicles. One of a new set of mobility services from Volkswagen dubbed We, it uses AI to learn rider preferences and recommend nearby destinations. It also delivers targeted offers and discounts from partners, including retailers, restaurants, and gas stations.

In the coming age of connected mobility and declining personal car ownership, industry leaders like Hohmann believe automakers need to become more like technology companies.

To stay competitive, Hohmann said, auto companies must offer continually updated services—like those enabled by We—instead of merely providing physical products that change little throughout their lifecycles.

According to a McKinsey & Company report, mobility services along with other data-driven services will make up an increasing portion of the automotive industry's revenue. Even as individual car ownership declines, according to the report, ride-sharing and other mobility services will continue to drive demand from fleet operators. The result is a potential 30 percent increase in revenue for the automotive industry as a whole—and for companies like VW willing to take advantage of the new opportunities.

Instead of isolated cars and people isolated by them, industry experts believe the future belongs to connected vehicles that bring people and businesses together. The best customer experience, they say, will include a seamless transition from a customer's personal experience with his or her data—for example via a smartphone—into a car.

The challenge for incumbent automakers used to a slower pace of innovation will be adapting to the shift quickly enough to stay ahead of the curve. For automakers, Hohmann said, the answer to the challenge lies in using data as the foundation for new service-based offerings for drivers and passengers. But they need help doing it.

"Volkswagen realized we want to create the mobility ecosystem of the future, but we can't do this on our own. We need strong partners," Hohmann said.

That's why VW developed We Experience through a collaboration with the IBM Garage and digital experience specialist Aperto, an IBM company. The partnership puts an agile process and startup mentality to work on a central challenge faced by one of the world's largest automakers.

"What counts really for me is saying, 'Innovate like a startup, scale like an enterprise,'" said Adriano Bezerra-Delaunay, Executive Director at Aperto.

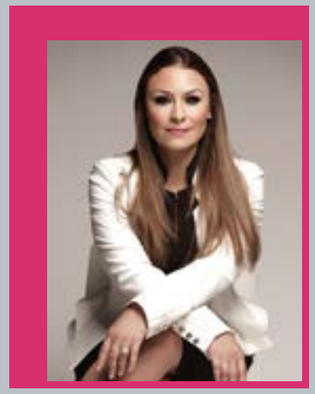
We's suite of services continues to grow. Among them is We Deliver, a GPS-enabled delivery service that turns the trunks of parked cars into drop boxes, and We Park, which enables cashless payments to replace parking meters. Soon, VW will take We beyond its testbed in Germany to Asia.

"We is a movement," said Hohmann. "It's not just a brand. It's not just a service. It's a movement, and everybody can be part of We."

To see We Experience in action, watch the video:
ibm.biz/IndustriousMagVW

with Sheri Hinish

Written by John Kultgen



"You can have the best strategy in the world, but nothing replaces a culture of integrity and compassion."

Meet Sheri Hinish. To colleagues and clients, she's known as the "Supply Chain Queen."

Hinish has made a career out of helping brands rethink supply chain sales and operations planning, strategy, and talent management. She's also a recognized IBM Futurist, and a strong voice across social and professional online communities.

Now pursuing a master's degree at Harvard University with a focus in sustainability, Hinish encourages leaders to see the business and social benefits of a circular economy. In this interview with Industrious, Hinish expands on her vision for the future of supply chain.

What drew you to supply chain management in the first place?

I love understanding connections, people, and learning. I also love transformation, taking something from one state and making it something magnificent. At its core, supply chain encompasses both of these things: it connects the dots across strategy, people, process, and technology, and provides an environment for change.

You spend your days helping supply chain executives and professionals transform their approach to supply chain management. What's the biggest concern the people you meet with have?

The biggest concern executives have is what investments in supply chain technology will yield the most value and how to balance the pace of adoption and the pace of change. The management of change is increasingly important, as is providing the perspective that technology is an enabler; it does not replace good process and an engaging culture. You can have the best strategy in the world, but nothing replaces a culture of integrity and compassion.

You've mentioned that supply chain is currently in a renaissance. What are the most significant changes taking place?

The most significant changes involve incorporating new ways of working and connecting across traditional supply chain processes and functions in a new digital ecosystem. Anticipating and delivering products to customers when and where they need them requires understanding the voice of the customer and being able to translate it into capabilities that leverage new sensing, planning, production, reporting, visibility, and execution.

You often talk about the advantages of marrying supply chain management and sustainability. Why is that such an important issue for you, and for businesses?

For a company to be successful, it must master supply chain management. I also believe that to succeed as human beings, we need to master sustainability. We can and must inevitably do both. There is a way to align people, planet, and profit in supply chain, achieve cost-effectiveness, satisfy the voice of the customer, and reduce or eliminate negative impact on the environment.

With all the advancements in technology over the past few years, it's not likely that every supply chain manager is moving fast enough. What's the most important step a supply chain professional can take today to start a transformation?

If I had to recommend one thing, it's to take the time to understand your current state. Document your processes across functions and within your ecosystem of trading partners. Really understand the handoffs, your organization's capabilities, how you measure success, and how you incentivize behaviors. I'd spend more time dialing in good process and developing talent and effective behaviors in your supply chain organization, focusing on nurturing the soil and roots.

Consumer

Consumer companies are realizing that AI can enhance data within complex areas of business. The IBM Institute for Business Value and Oxford Economics interviewed 1,900 retail and CP professionals in supply chain, store operations, merchandising, and other relevant areas.

Now

Retailers using AI

51%
Customer intelligence

48%
Demand forecasting

38%
Pricing & promotion

CP companies using AI

45%
Customer intelligence

38%
Production planning

38%
Supply chain planning

In 3 years

Retailers plan to deploy AI in

79%
Customer intelligence

85%
Demand forecasting

73%
Pricing & promotion

CP companies plan to deploy AI

79%
Customer intelligence

77%
Production planning

79%
Supply chain planning

AI's impact on employees

81%
expect to reskill and retrain employees

65%
expect to deploy employees to new roles

13%
expect to create new roles with new skills

Recommendations:

Think big: Take an enterprise approach and strategize an AI foundation.
Start small: Streamline expansion with an AI command center that keeps strategy intact.
Work differently: Prioritize AI opportunities based on efficiency gains, but ensure strategy addresses talent management and knowledge retention.

For more consumer industry insights:
ibm.biz/IndustriousMagConsumer

“This is an opportunity for the industry to make a big step forward and go beyond the traditional way of doing things.”

Watch our documentary on Golden State Foods:
ibm.biz/GoldenStateFoods

Golden State Foods' protein plant in Opelika, Alabama

Golden State Foods wants to show you where your hamburger comes from

Written by Jordan Teicher

Americans love beef.

In 2016, American beef consumption was the fourth highest in the world per capita, and four times higher than the world average.

But for many Americans, how that beef gets to their plates is something of a mystery. For a long time, most people were fine with that. But trends are changing.

"I think consumers are more educated today. They want to feel comfortable that the restaurants they're walking into did everything they possibly could to protect the product and to ensure it's being served over the counter safely," said Gregg Tarlton, the East Coast Regional Operations Director for Quality Custom Distribution, a subsidiary of the protein product provider Golden State Foods (GSF).

But tracking exactly what happens to beef from farm to fork in near real-time is not easy for any company. The beef supply chain, in particular, is highly segmented and only growing in complexity. Before a hamburger lands on a customer's plate, at least half a dozen businesses—ranches, feedlots, packers, processors, distribution centers, and restaurants—have had a hand in its creation and transportation.

Each business along that product lifecycle keeps its own meticulous records. Software systems designed to connect them, however, typically require a lot of manual inputs, are prone to errors, and encounter inherent delays. And those systems are not designed to track one of the most essential elements in the beef's journey—the temperature at which it's kept.

GSF and IBM believe they can address the issue with a combination of advanced technologies. This summer, they began piloting a solution that combines radio-frequency identification (RFID) to automatically track fresh beef's movement, IoT devices to monitor its temperature, and blockchain technology to orchestrate the business rules between parties in the supply chain. Working together, the technologies render a level of transparency, safety, and trust the industry has never seen before.

Though this pilot program links just three parties—a protein plant, a distribution center, and several quick-service restaurants—one day, GSF believes the program could be used to link the entire beef lifecycle, from the ranch to the restaurant.

"This solution is a cornerstone to empower consumers with unsurpassed transparency regarding the origin of their food and all the handoffs that happen along the way," said Guilda Javaheri, Golden State Foods' Chief Technology Officer.

At its 165,000-square-foot LEED-certified protein plant in Opelika, Alabama, Golden State Foods produces more than 160 million pounds of meat products every year. On the plant floor, employees form 100 percent beef patties, load them into boxes, palletize them, and store them in massive refrigerators and freezers.

This is where Wayne Morgan, GSF's corporate VP and president of the company's protein products group, goes to work every day. A lifelong beef industry professional with a PhD in Animal Science, Dr. Morgan is aware of everything that happens inside of the plant. But in the beef industry's current segmented state, he doesn't have any visibility beyond the distribution center where he ships his products.

"We don't have end-to-end visibility of the entire network," he said.

This summer, during GSF's pilot with IBM, Dr. Morgan helped demonstrate what next-generation visibility in the supply chain looks like. As part of the program, a new machine at the Opelika plant began applying RFID tags to a select number of boxes. A series of readers were installed to automatically register the location of the boxes as they moved through the facility to the loading dock and onto shipping trucks. IoT sensors, meanwhile, were placed in strategic manufacturing points to give instantaneous reports on ambient temperatures.

As shipments of beef left Opelika and proceeded to GSF's distribution center and ultimately to restaurants in North Carolina, Dr. Morgan—as well as his colleagues all along the supply chain—could open a dashboard and see where the shipments had gone, the temperature at which they'd been maintained, and their shelf life. And due to blockchain's immutable nature, no one could alter the numbers.

In Dr. Morgan's view, this level of transparency in near real-time is the type of change that could revolutionize the industry in a way not seen since the adoption of boxed beef in the 1970s.

"We've been treating beef the same way for many years," he said. "This is an opportunity for the industry to make a big step forward and go beyond the traditional way of doing things."

The distribution center in Garner, North Carolina where Golden State Foods ships its beef operates 24 hours a day, seven days a week. Every year, 15.5 million cases of products you might find at a restaurant—everything from napkins to ketchup to beef—move through the facility to more than 550 quick-service restaurants in three states.

Moving that much product around every day requires a huge amount of precise coordination. Phil Liuzzo, continuous improvement senior analyst at the facility, knows that well. He spends his days finding ways to make that orchestration run more smoothly so that restaurant operators are happy.

Even at today's best distribution centers, Liuzzo acknowledges, issues inevitably arise. A shipment may, due to human error, not contain the number of cases a customer ordered. If that happens, restaurant owners wouldn't know about the error until they'd received it. And by then, they might not have enough product to get by until the next planned delivery.

"Right now, they don't really have a good idea of where a truck's at, or what order is coming, or if we picked the right quantity," he said.

This summer, during the blockchain pilot, that changed. Newly-installed RFID readers at the distribution center automatically registered the number of cases of beef leaving the facility and communicated that information across the supply chain through the blockchain to the restaurants receiving it.

"Now with the dashboard, they're able to log on and see they have six cases en route, and they'll be there when they need them. That level of planning really helps the operator," Liuzzo said. "We're really making sure that the customers are getting the product they need with the temperature integrity required."

In the days after a delivery, all the parties in the supply chain can continue to monitor the beef, enabling efficiencies at every level. Restaurant operators can track their inventory—and its shelf life—allowing them to make sure they use a product at the optimal window in its shelf life. Consulting that same data, manufacturers and distribution centers could get a jump start on planning their schedules.

"Can you imagine how much waste could be prevented with that kind of information?" Javaheri said. "You're going to be able to ultimately have the right product at the right time at the right place."

In the sprawling beef industry, creating consensus is difficult—and expensive. But Tarlton believes that the cost of standing still for businesses, ultimately, is greater than the cost of change.

"It can protect the brand, protect their businesses, protect everything that they've worked so hard their entire life to make," Tarlton said.

It will likely take a while before a blockchain can fully unite the beef supply chain. And it will probably take even longer before a customer at a restaurant can access all the information on that blockchain.

"But it's a goal worth working toward," Liuzzo said.

with Mathew Shay

Written by Jordan Teicher

“I think what companies need to invest in today is the creation of a culture that embraces change truly and fundamentally.”

If the retail industry were a story, Matthew Shay would be considered a bard.

As President and CEO of the National Retail Federation (NRF), Shay’s job is to speak on behalf of the nation’s largest private-sector industry employer—and, crucially, to advocate for its success in Washington, D.C. and beyond.

In this interview with Industrious, Shay reflects on his tenure at NRF and describes the powerful forces shaping retail today.

What have been the biggest changes you’ve seen in the retail industry since you joined NRF in 2010?

There’s been a rapid transformation, which has really been driven by two things. One obviously was the economic environment coming out of the recession of 2008. The other was this rapid move toward experiential retail and this world in which customer expectations have grown dramatically in terms of fulfillment and performance. The bar has really been elevated. There’s also been an amazing disruption that’s occurred because of the use of technology and more recently by the use of mobile devices. That’s really accentuated the need for retailers to find ways to deliver unique experiences and still give increased levels of engagement with their customers.

AI is changing every industry, and retail is no exception. What does this technology mean for the industry?

We devote so much attention to these amazing technological advances. But the way they are deployed has to be balanced against the understanding that retailers are meant to be merchants delivering products to customers at a price point and with a level of convenience that creates value. If AI can be deployed to help accomplish that, that’s great. But obviously companies of different size and scale will have different levels of ability to employ some of these technologies. That’s why partnerships with companies like IBM are so important.

You speak with retail professionals every day. What are the biggest opportunities brands see in the current retail landscape and what are the biggest challenges?

As far as potential impediments, I think they’re mostly external factors that can’t be controlled, like the economy. But at the moment there’s a great deal of optimism about the near-term future. Consumers are really responding to the kinds of technologies and experiences that retailers have finally brought to market in sufficient scale to give them real benefits. That’s everything from fulfillment and delivery to price and selection and inventory turn. You’re going to see retailers continue to deploy commerce and technology broadly to enhance those shopping experiences in stores and online.

Retail is responsible for supporting one in four US jobs. As an advocate and spokesperson for such a critical industry, what do you see as your responsibility?

I started as a 15-year-old kid stocking shoes at the shoe store on Main Street, literally in the town square in a small town in rural Ohio. To have that initial experience with retail and now this one where I work with retailers of all shapes and sizes—from Main Street retailers to global giants and everyone in between—is a great privilege. I think of what I do as helping to talk about what’s really happening in retail. I highlight stories of retailers innovating and serving communities for those who aren’t familiar with retail, or don’t have a contemporary view of the industry. I’ve been doing it for eight years but I feel we’ve only begun to scratch the surface.

We’re in a time of rapid technological growth. What’s the best action a retail leader can take to stay ahead of the curve?

Personally, I’d put way more emphasis on cultural transformation than I would on capability creation. My experience is that just because you’ve got access to the resources that give you certain capabilities doesn’t mean you’re going to transform your business the way it needs to go. I think what companies need to invest in today is the creation of a culture that embraces change truly and fundamentally.

What a circular economy means for the industrial products industry

Written by: Jordan Teicher

In today's economy, we take resources from the ground, make products, and, more often than not, dispose of them. That's got to change, says Jad Oseyran, the Circular Economy Global Centre of Competence leader within IBM Global Business Services. The solution, he says, is to transition to a circular economy, one that decouples economic growth from the use of virgin resources.

In a circular economy, products, components and materials are reused across various industries, with the ultimate goal of producing zero waste while at the same time unlocking significant social and business value. The latest comprehensive study by McKinsey and the Ellen MacArthur foundation estimated the business opportunity to be worth $1.8 trillion globally by 2030.

We spoke with Oseyran about this idea and what it means for the industrial products industry.

Industrious: Why should we shift to a circular economy?

Oseyran: There is now clear evidence that a linear economy model of "take-make-dispose" is not viable moving forward towards a planet with an additional billion people by 2025. We are destroying our planet at breathtaking speed and scope, and the gravity of the risk is now being further recognized by the scientific community but also by business and governments. It is simply a serious economic threat besides being a well-being threat to humanity. We need to transform our industrial operating principles towards designing waste out from the beginning.

Are businesses already testing—and benefiting from—a circular economy?

Yes, various companies are benefiting from circular business models. As an example, a manufacturing plant of a leading automotive company became the most profitable for the manufacturer globally through its circular economy operating model. Gearboxes, injector heads, and cylinder heads are re-manufactured and re-introduced in the supply chain. This resulted in 80 percent less energy, 88 percent less water, 92 percent less chemical products, and 70 percent less waste production. Another great example is our own IBM GARS (Global Asset Recovery Services), where we successfully generate business value from reusing a large portion of our IT assets.

What kinds of solutions does IBM offer to create a circular economy?

If you think about it, waste is simply material without data or without identity. We are working on a digital platform solution for the built environment where the relevant "identity" of buildings and their content is created, leading ultimately to a professional marketplace whereby demand and supply for construction supplies is matched. It is effectively leading to the creation of an alternative supply network, transforming building to supply sources and unlocking various business models such as urban mining. The platform will further allow a variety of insights that enhance real estate valuation, enable the monitoring of CO2 and circular economy targets, improve building occupancy, and boost energy performance.

How can blockchain and AI play a role in all this?

Blockchain could play a role because trust will be a key success factor for adopting products in the newly created ecosystem. Think about trusting an unconventional supplier, such as an urban miner, that products have been tested and certified. As for AI, we're looking into visual recognition to facilitate the recognition of products and materials in buildings and training the system to recognize and collect the relevant information. That will facilitate the process in existing buildings where digital information is not readily available. We're hoping to launch the first reuse platform with our partner and hope it sets the compass for other industries toward waste-free and much more productive business models.

At IBM the circular economy is part of the Industrial Products industry. What other industries does it apply to and why is it important to them as well?

The short answer is all of them! Any industry or company that's asset-intensive, where they use materials, components, and/or products, is a good candidate to tackle. For example, there's enormous waste in the consumer products industry if you look at plastics. By 2050, it's estimated there will be more plastics than fish in the ocean by weight. Or think of the fashion industry where it is estimated that more than half of fast fashion production is disposed of in under a year, and one garbage truck full of textiles is landfilled or burned every second.

Some business leaders see sustainability as a hindrance to growth. What would you say to those people?

This is not about "Sustainability 2.0." It's not about doing the same things "less bad." As an industrial engineer and supply chain professional, I was trained and focused on squeezing that last bit of efficiency from the existing processes. But what about being more effective in the right process instead of just being efficient in the wrong operating model? What drew me to the circular economy is that it fosters innovation and new product introduction without further straining our resources. We could finally achieve two agendas: growth and sustainability.

In one of the coldest places on Earth, this utility keeps the power on

Written by Rich McKay

Over three days in January 2017, freezing rain and ice pellets enveloped New Brunswick, Canada. Rows of jagged icicles grew on cars, signs, and buildings. Broken tree branches shattered as they hit the frozen earth.

Layers of ice also smothered power lines, poles, and other infrastructure until they fell—causing widespread outages.

"New Brunswick Power experienced the most devastating weather event in our 100-year history," said Tony O'Hara, CTO and VP Engineering at Énergie NB Power. "The severe ice storm knocked out power to 133,000 of our 400,000 customers."

The extensive damage required NB Power to install 600 new utility poles, 150 new transformers, and 52 kilometers of new distribution lines at a steep cost of $30 million.

The slippery conditions delayed repairs and made it incredibly dangerous for crews to restore power. But time was of the essence.

"Even a few days without power can cause huge economic and human impacts across the province," said O'Hara. "Some types of industrial processes are very sensitive even to brief outages. And crucially, homes that depend on electrical heating are vulnerable to prolonged periods without power."

As the primary electrical utility for New Brunswick, NB Power has to ensure its electrical supply keeps the province's households warm and safe through winters that are among the world's coldest. In 2015, temperatures plummeted to -30°C (-22°F)—in April. People can suffer from frostbite in 10 minutes if exposed to that temperature, and insulated interior pipes in homes can freeze and burst.

With such unforgiving weather, repair crews need to quickly mobilize and get in position ahead of time to restore power faster and safer.

"If we believe bad weather is imminent, it's essential to determine where we think our repair crews and resources will be needed most," said O'Hara. "For an extensive restoration effort, we can be spending in excess of a million dollars per day on mobilizing people and equipment."

NB Power had previously relied on manual analysis or knowledge of past weather events to predict storm damage to its network. That was both difficult to execute well and relied on a handful of employees with years of experience.

Its legacy systems were also built to manage outages after they'd occurred. It was challenging to make confident and fast decisions about where to station repair crews.

NB realized that to get ahead of storms it needed to look ahead.

"We decided to develop a more automated, objective approach to storm damage forecasting and outage prediction," said O'Hara.

To help, NB Power turned to The Weather Company, an IBM Business.

As more than 70 percent of all outages are weather-related, using a more accurate outage prediction model is key, especially, O'Hara said, as "it's clear the severity of events is increasing."

Having detailed outage prediction models and data helps NB Power monitor weather forecasts three days in advance and then prepare and mobilize much earlier. NB can also quickly adjust its maintenance plans to avoid doing complex work when extreme weather is expected.

Similarly, if NB Power knows an ice storm is on the way, it can review its vegetation management schedules and identify and trim any overhanging trees before the weather hits.

This improved operational efficiency also means utilities can be more sustainable, which is good for both their wallets and the planet. But to take advantage, they need to harness an enormous amount of data. That's where AI comes in.

By capturing The Weather Company's data in great detail and analyzing it for patterns, AI can glean insights NB Power's experts might miss. According to O'Hara, NB has trained its AI with data from 32 storms.

The initial "study session" is just the beginning, as AI can learn and be more precise over time the more data it ingests. But AI is already helping optimize resources across the province.

"We've already experienced some significant storms this winter, and our decision-makers have been backing up their experience and instincts with hard data," said O'Hara.

On two occasions, outage prediction models gave NB the confidence to mobilize additional repair crews—and those extra resources made a real difference.

"We were recently able to reconnect 90 percent of our storm-hit customers within just 24 hours, which is a very positive result during the middle of the winter," O'Hara said.

Godzilla at the FrogID launch in November 2017
© Australian Museum

50,000 frog calls and counting: How crowd-sourced science could help heal the planet

Written by Justine Jablonska

Godzilla's dark eyes are deeply set atop his head, giving him near-180° vision. His skin is a bright green. He loves eating insects and is a skillful climber. And like all Australian Tree Frogs, Godzilla has a distinctive croak: an earthy bark somewhere between a seal's and puppy's.

Godzilla is the face of the Australian Museum's FrogID project, a citizen science project launched last year. The goal: find out where frogs are and what habitat they breed in, and use that data to see which frogs may be at risk, and where.

It's an ambitious undertaking made possible through the world's first smartphone app designed in partnership with IBM to record and report frog calls without disturbing the creatures. A call is one of the most accurate ways to identify frogs, so that's what the app records, along with recording date, time, and GPS location.

Bettina Cutler, IBM's Citizenship Manager for FrogID, was part of the team that worked with the museum on the app—including testing in the environment it's now used.

"We went on a field trip out in the bush," she said. "All the developers were very excited. During the day, we scouted for spots where frogs might be found."

They returned to test the app at night when the nocturnal amphibians are at their froggiest: croaking, barking, whistling, chirping. The development team gave careful consideration to preserving the environment in the app's design, so the app screens are dark for the least intrusion possible.

Why frogs? They're at a tipping point in the environment and an important indicator of the health of their surrounding habitats, said Jodi Rowley, the Australian Museum's Curator of Amphibian & Reptile Conservation Biology.

Dr. Rowley has discovered 26 frog species in Australia and Asia. She estimates the project will help conserve Australia's 240 native frog species and their surroundings—and perhaps even lead to the discovery of new species. She and her team listen to all the calls received via the app. So far, those number more than 50,000.

Environmental consciousness is an important part of Frog ID: "When you go for a walk and are listening for frogs, you become more conscious about the environment," said Cutler. "That's something we're trying to instill in people."

The project includes a school program that teachers can use in their STEM lessons, but isn't limited to children.

"It appeals to all ages," Cutler said. "So many people are involved."

Sally Patterson, an avid FrogID app user, lives on a farm in South West Australia where she raises sheep and grows

crops. Her favorite hobby is photographing the wildlife on her property.

"I developed a passion for Southern Bell Frogs after finding some in the dogs' water dishes during a very dry summer years ago," she said in an email. "When I discovered they were endangered, I decided to build a pond for them in the garden."

Three years later, the pond is also home to Brown Tree Frogs, which, she said have "bred in abundance."

Patterson first focused on recording the frogs in that pond, and then on various dams on her property. She continues to extend her radius, taking back roads on her 40-minute drive to the nearest supermarket.

"I now drive more slowly with the window down and if I hear frogs, I'll stop and do a quick recording," she said. "Takes me a big longer, but worth it!"

In addition to the Southern Bell and Brown Tree Frogs, she's recorded Eastern Banjo Frogs and Striped Marsh Frogs, among others. Patterson is proud of what she calls her "small contribution to science." She's concerned about the impact of humans on the planet, and credits the app with learning about various environmental issues.

Another FrogID enthusiast, Roxanne Herson, lives in Sydney's Upper North Shore, on the edge of Garigal National Park. She's learned a lot from the app—("Nicely surprised by the frog pictures and details," she wrote)—but has yet to record her resident frogs.

"I have caught them watching me through the bi-fold doors going out onto the patio, but they must have a sixth sense when I bring out my phone as they stop calling," she said.

She remains optimistic, however, and has promised to share when she records her first frog.

Dr. Jodi Rowley with Godzilla at the FrogID launch

Litoria aurea

Pseudophryne australis

A year into FrogID's launch, users have found 170 species and more than 45,000 frogs have been verified—and those numbers grow weekly. The goal for the project's entirety of five years is 200,000 frog recordings. According to Dr. Rowley, they're well on their way to exceed that target. Other targets include number of species, number of repeat recordings from places, and ensuring that calls are received from each species across Australia.

University of Maryland biology professor Dr. Karen R. Lips is impressed with the speed at which the project is gathering data.

"We have plenty of experts but the chance to go out into the field is limited," she said in a phone interview.

Crowd sourcing gathers massive amounts of data in short amounts of time with limited resources. One scientist in a lab might spend a lifetime gathering that amount of data. The Australian Museum is creating maps in real time from the data, so its scientists will be able to analyze the data much earlier thanks to the immense crowd-sourcing.

That, Dr. Lips said, will lead to great conservation decisions thanks to the huge amount of data.

"It's great biology," Dr. Lips said.

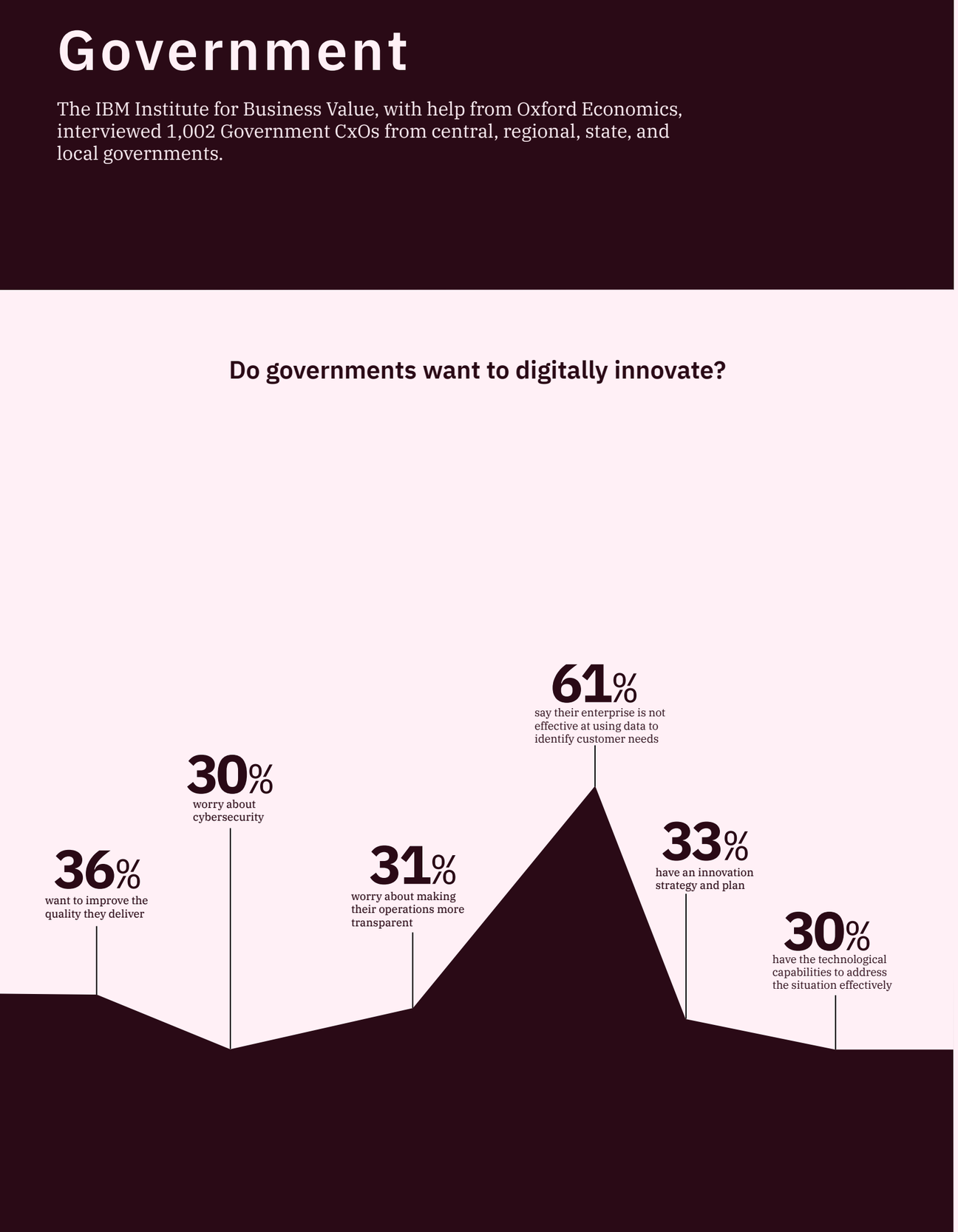
Dane Trembath has lived in Australia's Northern Territory for more than 20 years, and is part of the team that helps Dr. Rowley identify frog calls. He's excited about the data being collected.

"By knowing where frogs live and breed, the Australian government will be able to make important decisions," he said. "Without that data, bad decisions could be made that can't be reversed."

Government

The IBM Institute for Business Value, with help from Oxford Economics, interviewed 1,002 Government CxOs from central, regional, state, and local governments.

Do governments want to digitally innovate?



Those focused on developing breakthrough products, services, and business models, are more confident.

65%
effective at using data to understand customer and citizen needs

63%
created formal strategies for dealing with disruption

64%
have a strong grasp of how government is evolving

Recommendations:

Apply cloud and AI processes to improve business agility.
Bring designers and data analysts together to better act on citizens' needs.
Foster transparency and share your organization's vision with employees.
Hire data scientists and digital engineers who can communicate well.

For more government industry insights:
ibm.biz/IndustriousMagGov

> “We’re at the cusp of major technology-led transformations in the government industry. These are existential, society-shaping opportunities.”

IBM’s Sreeram Visvanathan is digitally transforming the world’s governments

Written by Justine Jablonska

Sreeram Visvanathan spent considerable time in South Africa in the early 2000s, a decade after its transformation from hostile apartheid to democracy. He developed strategies, reviewed business operations, and met with numerous clients as well as young South Africans. He observed a palpable energy and positivity towards the future.

In his conversations with South African youth, he said, “they told me that the past was unfair, and all they wanted now was the opportunity to succeed.”

Insightful observation and meaningful dialogue that lead to a better future: these are common threads in Visvanathan’s career, which has led him from IT through consulting and now to IBM’s government industry. He’s been the global managing director for nearly three years, imbuing his work with a thoughtful, collaborative approach that drives the transformation of governments around the world.

Visvanathan was born in Bangalore, India. He credits his father, who worked for the government his entire career, with fostering his already innate curiosity. The two would have elaborate discussions on various subjects.

After starting his career in the IT industry, he moved to consulting.

In the MENA region, including Jordan, Kenya, Egypt, Saudi Arabia, and the UAE, he spent time in conversations with constituents to understand the complexities of the region’s most basic yet crucial issues.

“We who live in fairly developed countries take things for granted what many people around the world don’t have,” he said.

Today, Visvanathan is working to help IBM tackle some of the world’s most complex issues, including human trafficking, disaster crisis management,and the aging workforce.

“We’re at the cusp of major, technology-led transformations in the government industry,” he said, due to numerous geo-political, societal, and economic forcing functions.

One of Visvanathan’s major projects for 2019 is a disaster management platform.

“Years ago, we didn’t have the speed or scale to help governments prepare the way we do today,” he said. That includes advanced hurricane warnings, communications, and coordinating activities among agencies. Afterwards, there’s recovery and rebuilding. Technology can help here too: blockchain, for example, can ensure transparency into every dollar that goes into rebuilding.

“These are existential, society-shaping opportunities,” he said.“We’re at the beginning of the Information Age, the fourth cycle of the industrial revolution.”

In each of those cycles, he believes, we face disruption that challenges societal norms. Today, AI and automation are among those disruptors, and they’re at the forefront of Visvanathan’s mind for 2019 and beyond. He believes governments have an important role to play in embracing these technologies. Equally important are governments’ roles in policies around data, the right to information, transparency, and bias.

Another focus is the worldwide aging workforce, and how governments will attract and retain new generations of workers.

For Visvanathan, the answer goes beyond digital skills: “it’s a change of lens and responsibility” as governments move towards a customer relationship management model with their constituents.

The challenge for him remains how to embolden government leaders to drive that charge and challenge the status quo using technology as the enabler.

Ultimately, he wants to leave both his clients and employees with the message that anything is possible.

“With a problem that’s difficult to crack, I want to go after it,” he said. “I find that exciting.”

Connect with Sreeram:
ibm.biz/IndustriousMagSreeram

> “Technology is moving so fast that it enables competitors to move quickly and spring up from nowhere. It changes the playing field.”

IBM’s Steve Laughlin works on the front lines of retail reinvention

Written by Jordan Teicher

Early in his career, Steve Laughlin sold grills at a department store in Florida. By his account, he was pretty good at it.

Problem was, the grills came in more than 300 pieces, and the store didn’t offer a service for assembling them. So, for a bit of extra cash, Laughlin regularly put the products together for customers himself.

“I think that was just always me. I always had this service orientation,” he said.

Today, as IBM’s VP and General Manager for the Global Consumer Industry, Laughlin is still in the habit of going above and beyond to solve business problems. But his job has gotten vastly more complex over the years, as he’s moved from store management to consulting to helping big retailers adopt groundbreaking technologies to better serve their customers.

“The bug was in me from the get-go to help clients transform and change how they engage with customers. Whatever my job has been, it’s always sort of woven through that theme,” he said.

Today, as Laughlin crisscrosses the globe meeting with prospective clients and longtime business partners, the transformations he advocates have grown grander in scale as he’s acquired ever larger clients. He asks retailers to rethink their assortment and inventory, for instance, by integrating hyperlocal data and AI into their decision-making. He asks them to explore personalizing their mobile marketing messages by targeting customers based on their geolocation. He asks them to use AR and VR to radically change their store experience.

In some ways, Laughlin said, the challenges retailers face—the emergence of new competitors and new industry-shaking technologies—are the same ones they encountered in 1995 when he first started working at IBM and was advising companies on how to deal with the growth of category killers. But in other ways, he said, the challenges are more daunting than they’ve ever been.

“Technology is moving so fast that it enables competitors to move quickly and spring up from nowhere. It changes the playing field,” he said.

Inevitably, not every business sees the landscape the same way Laughlin does. But when he meets with clients, he said, he doesn’t seek to sell them on his point of view every time. First and foremost, he said, he seeks merely to speak with them sincerely—and to bring the same spirit of service and customer-centricity to his suggestions as he brought to assembling grills decades ago.

“If you do what’s right for the client first, what’s right for the company second, and for yourself last, 99 percent of the time things will end up well for us,” he said.

Connect with Steve:
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> “Whenever things are so new and we are shaping the world in a new way, we need everybody to contribute.”

IBM’s Martina Koederitz believes diversity will power the new data economy

Written by Jordan Teicher

Upon entering the Mercedes Museum in Stuttgart, Germany, visitors encounter a taxidermied horse. Printed beneath is a 1905 quotation from German Kaiser Wilhelm II: “I do believe in the horse. The automobile is no more than a transitory phenomenon.”

IBM’s Martina Koederitz grew up in Stuttgart, and when she thinks about some of the transformative technologies she works with every day her thoughts often turn to Wilhelm II’s remark. A hundred years ago, she said, cars were expensive, loud, and difficult to operate. Not everyone could grasp how they’d inevitably make a lasting impact on the world. The same, she argued, can be said of some of today’s biggest innovations.

“We are shaping the world in a new way,” she said. “AI is a new technology. IoT is a new technology. We’re at the beginning of a new data economy.”

Koederitz began working at IBM as a college student in Stuttgart in 1984. At the time, she told Industrious, it was something of an unusual move. While her friends and classmates in Germany were seeking work at banks and automakers in the region, she decided to follow the example of her father—an IBMer—and pursue a career at an international company with strong progressive values, where women received equal pay for equal work and had the opportunity to advance to the highest leadership ranks.

“I didn’t know at this time what would happen in IT. I didn’t know how the world would change,” she said. “But I was convinced that a company with an open culture, a diverse culture, and an innovation culture would give me the chance to contribute for many years in the best possible way.”

Over the course of more than 30 years at IBM, Koederitz has had a chance to contribute to the company in a number of ways. She’s been a sales manager for the financial services sector. She’s led IBM’s mainframe business in Europe. She’s overseen IBM’s business in Germany, Austria, and Switzerland.

In the process, she’s seen technological breakthroughs—the personal computer, for example, and the internet—change how business is done at IBM, and, at the same time, change the world. Today, Koederitz believes the world is at another inflection point.

As IBM’s Global Industry Managing Director for Automotive, Aerospace, Defense & Industrial Products, she is helping businesses harness a new generation of powerful and accessible systems, platforms, and technologies to fundamentally change how they operate and impact peoples’ lives. These kinds of transformations, she said, involve leaders at every level of an organization—from CFOs to CEOs to plant managers.

“Back when I first started, IBM was very much seen as a strategic partner for the IT department,” she said. “But today we’re really talking about industry-relevant solutions for business. Now it’s about how we use our portfolio, our technology, and our solutions to enable new business ideas, new innovations, and new ecosystems.”

To maximize the opportunities of these new technologies, Koederitz said, companies across industries need to make a commitment to data security, privacy and protection. As a board member of Charter of Trust—a group of industry partners that has developed principles to determine cybersecurity requirements and standards—Koederitz is working to ensure it.

“We have to take responsibility as humans for how we apply this technology,” she said.

For the best results, Koederitz said, that responsibility must be shared by a workforce as diverse as the populations that will be impacted by these new technologies—which is to say, as diverse as the whole world.

“If we want to change the world, we need to really have diversity and inclusion. Whenever things are so new and we are shaping the world in a new way, we need everybody to contribute,” she said.

Connect with Martina:
ibm.biz/IndustriousMagMartina

> “An airline truly has one product. It’s that seat on that plane, going to a destination right now. Everybody has to come together.”

IBM’s Dee Waddell wants to bring the world together through travel

Written by Rich McKay

At a family reunion in Brazil a few years back, Dee Waddell noticed something fascinating: the conversation was happening in three languages. He and his wife spoke English and Japanese, his wife’s great-aunt spoke an Okinawan dialect of Japanese, and some of his family—those who had immigrated to Brazil—spoke Portuguese and English.

“We had a constant three-way translation,” said Waddell, Global Managing Director, Travel & Transportation Industries at IBM. “Our languages told the history of our family, and how our movement around the world impacted us across generations. It’s led to a good life for many of us.”

For Waddell, it was a personal lesson in how travel brings the world together, fundamentally transforming how we perceive each other.

“When people start crossing borders, they see and appreciate the diversity of other cultures,” he said. “Think about the last time you traveled. You realize that people are people no matter the color of their skin, nationality, sexual preferences, religious ideals, or whatever it may be—people cry the same way, feel happy the same way.”

Waddell got his start in the travel and transportation industry when he joined United New Ventures, a subsidiary of United Airlines, which helped launch Orbitz and Hotwire and also managed United.com and Mileage Plus. There, Waddell led critical customer experience initiatives integrating all of United Airlines. He also took on the leadership of United.com, developing the digital and mobile strategy and ultimately delivering the online products and services.

“I really enjoyed the airline. It was complex, with heavy assets and a lot of people. The challenge of having to come together to deliver one product like a seat was amazing,” said Waddell. “The ability to transform and impact the way people worked was when I fell in love.”

When Waddell joined IBM three years ago, he knew that mobile was a powerful way to help his clients transform. Apple and IBM had joined together the previous year with that goal in mind.

For the travel industry, however, there were unique impediments to large-scale transformation.

“Job categories are in very steep silos,” he said. “Take pilots. They need certifications, training, and often have their own unions. The same thing for the on-board staff, flight attendants, dispatchers, and maintenance.”

All these siloed roles must coordinate closely to choreograph all work to make sure flights leave on time.

“An airline truly has one product,” said Waddell. “It’s that seat on that plane, going to a destination right now. Everybody has to come together.”

He believes mobile can help through AI, blockchain, and cloud-powered apps can deliver the right information across job roles to make employees’ jobs easier. That will allow them to sell more, be safer, and provide better customer experience.

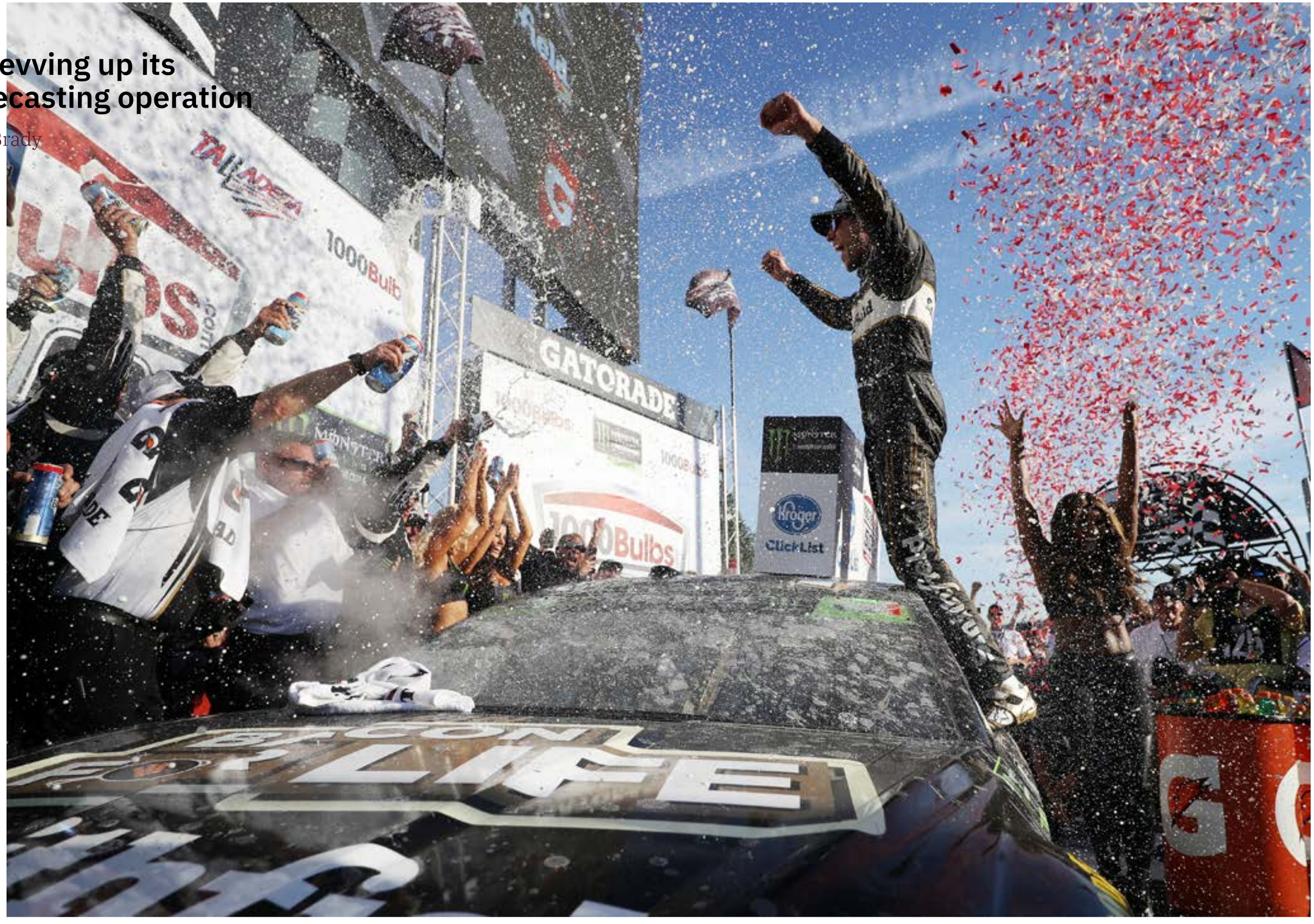
“Pilots can get inspections, the flight path, weather data, fuel allocated—all of the pieces that go into a pilot’s checklist on an iPad,” he said. “Compare that to carrying 40 pounds of manuals.”

The mobile apps created so far are winning over their toughest critics—the people who are actually using them. Waddell hears from client airline employees about how much they love using the mobile tools and are “totally passionate about how much an app has transformed their job.”

Hear from Dee:
ibm.biz/IndustriousMagDee

NASCAR is revving up its weather forecasting operation

Written by Marina Brady



In stock car racing, a little precipitation can bring some of the fastest cars in the world to a halt.

"A 3,500-pound stock car can't race in the rain. It's highly dangerous. Rain alone is enough to postpone an event," said John Bobo, NASCAR's VP of Racing Operations.

Scheduling races to avoid bad weather, consequently, is a huge imperative for NASCAR. But for years, NASCAR relied on the weather data provided by the tracks where it holds its events to inform scheduling decisions. And those track operators relied on different sources of weather data, which offered inconsistent insights.

Often, a race simply needs to be moved an hour or two earlier or later than originally planned to avoid a storm. But without precise knowledge of a storm's expected landfall, NASCAR would sometimes move the race a day or two away from

weekend prime time. That cost the league millions of dollars in ad revenue, ticket sales, and staff—and disappointed legions of fans.

"A 10 a.m., 11a.m. race on a Monday is not the best viewership for our broadcast partners. So we're doing everything we can to get the race in that day," Bobo said.

What NASCAR needed, Bobo said, was highly accurate weather data at the most local level possible, and analytics specifically tailored to a racing event. It called in for help from Flagship Solutions Group and The Weather Company, an IBM Business.

"One of the things we know is that weather is, in fact, hyperlocal. If you're within two kilometers of a weather reporting station, your report is going to be 15 percent more accurate," said IBM's Michelle Boockoff-Bajdek. "Think about that from an analytics perspective. When you can get 15 percent more accuracy, you're going to have a much better output."

Today, NASCAR is achieving that level of accuracy with WeatherTrack, a real-time weather insights dashboard that taps into The Weather Company's vast wealth of data from 250,000 personal weather stations, nine million webcam uploads, two million crowd reports, 50 million Internet of Things barometric reports, and 162 forecast models.

Businesses across industries rely on The Weather Company to help make informed decisions. But each business' specific data needs are unique. In the WeatherTrack dashboard, which Flagship designed specifically for NASCAR, planners are directed to the weather factors—including air density, cloud cover, and wind speeds—that most affect car performance and track conditions. The data is continuously updated and tailored for each track where NASCAR races are hosted.

"NASCAR is a sport where victory is determined in thousandths of a second," said Nick Franza, NASCAR's Senior Manager of Technology Development. "Having highly accurate, scientifically-validated information improves the experience for everyone involved."

These days, NASCAR event planners are able to schedule races between storms, saving money, ensuring safety, and creating happier fans. And if they're ever not completely sure about a decision, they can call a dedicated Weather Company meteorologist at any time.

For Bobo, that's not merely a convenience; it's key to offering the kinds of experiences that he and his colleagues are charged with delivering to sports fans.

"We want to concentrate on officiating a race and putting on the best entertainment we can for sports fans," Bobo said. "It's a joy to look at the data and pick up the phone and not have to figure this out myself."

with Alex Winter

Written by Jordan Teicher

“This is a moment of exploration and innovation, not a moment of completion.”

Alex Winter first made a name for himself in the 1980s as an actor in films like “Bill & Ted’s Excellent Adventure” and “The Lost Boys.” But in the last few years, Winter has developed a reputation as a director of in-depth documentaries about technology, with films such as 2012’s “Downloaded” about Napster, and 2015’s “Deep Web” about the Silk Road.

Now he’s set his sights on blockchain in “Trust Machine,” which was produced and distributed by blockchain entertainment studio SingularDTV together with Winter’s Trouper Productions and Geoff Clark’s Futurism Studios. In this interview with Industrious, Winter discussed the film and this moment of “exploration and innovation” in the technology’s history.

There seems to be a lot of public awareness about bitcoin but less about blockchain. Why did you want to make a movie about blockchain specifically?

I was interested in focusing on blockchain because it allows a broader examination of the people and the issues in this arena. Bitcoin is important and fascinating but limited to a discussion about cryptocurrency. I wanted to focus on the space beyond just a single cryptocurrency.

How, if at all, did your own thinking on blockchain change in the course of making this film?

It didn’t really change, as I’ve been studying emerging technologies for a long time. But I wasn’t aware of certain actors using blockchain-based technologies, and the details of how they planned to use them, such as UNICEF looking to use a distributed ledger to help track refugees, and things like the Brooklyn Micro Grid. I was inspired by the passion and ingenuity of these organizations.

For the film, you met with a variety of people using the same underlying technology for a wide range of initiatives. Can you describe some of those initiatives and what they say to you about blockchain’s potential?

We covered a very broad swath of people, as that was part of the aim of the film—to illustrate this kind of land rush to solve some of the world’s most pressing problems with these technologies. And, of course, they won’t all succeed, but the effort is intense, and that’s very interesting terrain for a film. So we explore companies helping track and feed refugees, energy companies looking to solve solar energy and climate issues, artists who want to protect their rights and deal more directly and equitably with their audience, finance companies that want to create cryptocurrency exchanges much like the stock exchange, and companies keen on solving the huge problem of identity and privacy in the Digital Age. We also explore some of the colorful scammers and speculators.

Blockchain is a fast-moving space. What do you think organizations should consider as they move to explore and perhaps adopt this technology?

These are the early days of the Information Age. We are on shaky ground and no one knows what will stick and what won’t. I’m not an expert but an observer, though I think it’s pretty clear that the word “blockchain” is only a kind of catch-all for the idea and potential of a distributed ledger. A lot is going to change in the next few years. Whatever happens with blockchain and the actors in this space, the future will not look like the present at all. So patience and prudence are required. This is a moment of exploration and innovation, not a moment of completion.

“Trust Machine” is the first blockchain-funded and distributed documentary, and the film covers Mycelia, Imogen Heap’s blockchain project for artists and music rights. What do you think media and entertainment professionals, in particular, should take away from this film?

A lot of good has come from the digital revolution: accessibility, self-distribution, convenience. But while the previous system crumbled, what rose in its place is less equitable for artists and has yet to solve the old, byzantine system of copyright and payment structures. A distributed ledger could be the beginning of radically simplifying these old systems and creating a more efficient and more equitable system for the Information Age.

“These days, turnaround has to be quick, and it has to be safe.”

Boeing 777-300 at Schiphol Airport in Amsterdam
© KLM Royal Dutch Airlines

This century-old airline is reinventing travel from the ground up

Written by Michael Todd Cohen

From a steady stream of rainy days in January to an unyielding 16.5 hours of daylight in July—Amsterdam Airport Schiphol in the Netherlands can be particularly tough on the ground crew working the "apron" (also known as a tarmac).

"These days, turnaround has to be quick, and it has to be safe," said Manfred Van den Heuvel, a turnaround coordinator with KLM Royal Dutch Airlines.

Despite any inclement weather, Van den Heuvel and his colleagues are responsible for coordinating the turnaround of KLM aircrafts arriving and departing Schiphol—the airport with the most connections in Europe. In 2017, 108 airlines flew from Schiphol to 322 destinations.

To make the turnaround as efficient as possible, catering, cleaning, fueling, and unloading and loading of passengers and cargo all have to be accounted for—within an average of 45 minutes. Until recently, according to Van den Heuvel, this orchestration was a tangle of antiquated systems.

"Before, the issue was that we had one tablet and five programs to make one flight happen," Van den Heuvel said. "On occasion, the [Wi-Fi] connection was lost and you couldn't use it for five minutes and the whole program shut off."

Limited access to essential data can cause both safety concerns and delays that frustrate passengers. With stiff competition from budget carriers, legacy airlines like KLM can't afford to disappoint rising customer expectations.

How did the oldest airline in the world go about reinventing itself in a market of quick-turn competition?

"We thought, OK, we need to give [coordinators] a mobile tool," said Ilse De Valk, product owner at KLM. "We need to give them the right information at the right place."

Despite some internal debate and healthy skepticism, De Valk got on a plane to Cupertino, California, along with a group of ground officers

There, they embarked on a three-day IBM Enterprise Design Thinking workshop—along with partner Apple. Enterprise Design Thinking focuses on business outcomes and "restless reinvention," a form of rapid prototyping. What happened next would fundamentally change the operations of the airline.

"The first day it was about writing down the process: what are the different things the ramp officers need to do in the ramp?" said De Valk. "The second day we were diving into more details based on that wireframe."

Appron (a combination of "apron" and "app") was born.

The new app combined the data from all the disparate departments into a single experience that can notify the turnaround coordinators of any changes due to flight or passenger delays.

"What we built there in the three days is still the base of the product we currently have, and I think that's amazing, that you can just achieve that in three days," said De Valk.

The tool also gives a view of all relevant data to coordinate tasks like flight information and team member contacts—including the captain and gate crew. It even gives an overview of the layout of the incoming aircraft, so they can plan exactly where to load the incoming baggage most efficiently.

Today on the apron, the new app has a high adoption rate and coordinators like Van den Heuvel are experiencing a marked difference.

"[It's] much quicker, much more insight. [With] one look you can see everything, all the information at one time," he said. "And 10 months later it's improving so much. Everybody uses it, they are happy with it. It's only one system."

If a passenger fails to make their flight, Van den Heuvel is notified what cargo container the passenger's baggage is in and can stop it from loading onto the plane, rather than having to unload it from the hold later and search for the bag, causing delays.

Mark Bovenkerk, Business Development for KLM, said Appron is "directly impacting customer experience because the flights are more on-time. We are preventing delays."

Part of the success, he said, was the inclusion of the employees who would eventually use and improve the app from the start.

"Let the end users design the tool they need to make their work better," Bovenkerk said. "And we did. Those users are still our ambassadors. Those users own the tool. As a group, it's their tool."

Is AI the answer to HR bias?

Written by Ashley Patterson

Six seconds.

Imagine for a moment that you're applying for a job. You're lucky enough to have your resume make it out of the pile and onto a recruiter's desk. Studies have shown the recruiter will likely spend about six seconds looking at your resume to determine a potential fit. In that amount of time, chances are they'll read your name, most recent job title, and where you went to school.

Now consider the impact of unconscious bias on this process.

Research from the job site Indeed shows that 37 percent of hiring managers who self-identify as coming from a top school said they only like to hire candidates from top institutions. The gender-biased language used in a vast number of job descriptions can dissuade those who do not identify with the job description from ever applying. And numerous studies have shown that minority applicants who "whiten" their resumes—for example, changing an African-American-sounding or Asian-sounding name to a white-sounding name—get more interviews.

Humans have an innate tendency to like people similar to themselves. Managers and recruiters tend to value the skills and characteristics of their current staff, which results in a limited perception of who's considered a suitable candidate. Upon meeting, humans can take as little as four minutes to decide whether or not they like someone, and after that, it becomes exponentially harder to alter that opinion.

Although bias in the hiring process is not generally intentional, it has real consequences. While most organizations today are on board with the idea that it's good to have a diverse and inclusive culture, most have not solved the problem of unconscious bias in HR.

That's where AI comes in. Developed and trained correctly, AI tools can help HR professionals find and prevent unconscious biases that can affect the talent recruitment process and help businesses achieve a stronger, more diverse, and more inclusive workforce in the process.

IBM has been working with some of the industry's top psychologists to produce tools for HR, like an AI scoring system that helps recruiters parse applicants quickly with unbiased accuracy. The goal for developing these tools is simple: ensure organizations select candidates based on ability, not bias.

"When it came to taking AI into the world of HR, it was central to our mission that we ensured the algorithms—built with teams of our experienced industrial-organizational psychologists working with computer scientists in the core Watson team—were designed to eliminate human and unconscious bias," said Aarti Borkar, Vice President of Offering Management and Design for IBM Watson Talent and Collaboration Solutions.

With recent missteps of AI-powered HR systems perpetuating bias in hiring, the obvious next question is: how do you know you aren't training the AI on existing biases?

It's a critical question. AI trained with biased hiring data will inevitably be biased itself. Consider this scenario: if the majority of your engineering roles have been filled with men in the past, it's likely that your historical hiring data will introduce a bias against women engineers. When that data is used to train an AI system that assesses engineering candidates, gender will need to be removed as an influencer.

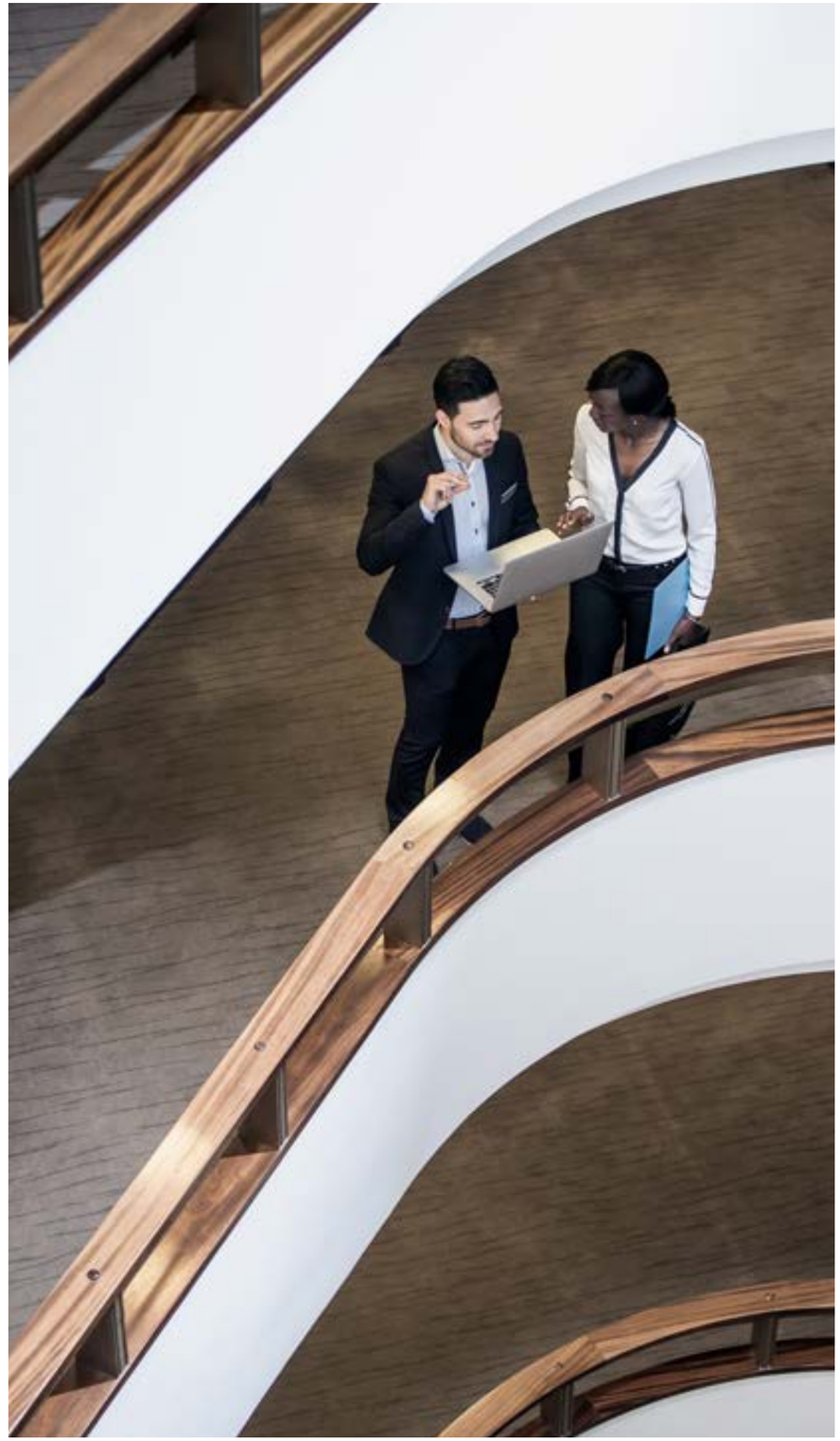
Other influencers include age, ethnicity, and education. If, for example, your company frequently recruits at Stanford, training an AI model on your historical hiring data without removing education as an influencer could introduce an unintended bias against certain ethnicities. Only seven percent of Stanford undergraduate students, for instance, are African-American.

"Reducing bias is a critical element of culture change," said Borkar. "By introducing the right AI into the process, we are able to change behaviors and have a lasting and meaningful impact. AI trained with bad data and by people who are not subject matter experts in the functional space could have a damaging and opposite effect."

Nearly half of all 2017 funding ($1B+) for HR technology went to AI-focused companies. That number is expected to have increased in 2018. The opportunity for these tools to revolutionize the way companies operate is immense, but AI must be monitored and corrections must be made for human-introduced bias.

In response to this challenge, IBM engineers and psychologists have built a tool that analyzes for adverse impact (disparity in selection for hiring or promotion that disadvantages individuals of a particular race, ethnicity, or sex). This tool can identify potential bias in customers' data before the AI is trained, which enables models to be adjusted to eliminate those influencers. Importantly, this same tool can be used to monitor the AI results once they start being used.

"A deep commitment to bring thoughtful and ethical AI into the world is essential for anyone working on these tools," said Borkar. "As businesses begin to understand the need for AI and adopt it into their workflows, it's equally important that builders of AI understand that creating trusted tools that recognize bias in data and processes is a critical foundation for success."



Address bias in the workplace with the help of Watson:
ibm.biz/IndustriousMagBias

“Where I am right now, my personal journey is essential. I spent the first 35 years of my life hiding.”

Out-and-proud CTO Charlotte Wang: live authentically

Written by Justine Jablonska

Charlotte Wang's last ship: Her Majesty's Canadian Ship (HMCS) Yellowknife © Royal Canadian Navy

Her great-great-grandfather captained Norwegian fjord ships from Bergen to the North Pole in the 1890s. Her grandfather left his Norwegian home at 14. By 18, he'd sailed the seven seas, and settled in Canada. Her father joined the Canadian Naval Reserves at university.

And so when Charlotte Wang turned 18, she too turned towards the sea.

"It was in my blood," she said. She'd grown up with stories and photos of her ancestors at sea.

"There's always been a joke in our family that we come from a long line of seafarers."

The Canadian Navy was a natural fit, with excellent timing: the military was actively recruiting women.

"The beautiful thing is that as a woman in the early 1980s, I had an avenue to join," she said. When she told her family, there was—naturally—no objection.

"It was: 'Great! Go serve your country.' Nothing held me back," she said. "That was the beginning of me being empowered to think big."

Wang was in one of the first cohorts of women recruited through the Canadian Navy's new program. She and a handful of other women—still friends today—entered a very male-dominated environment. But the Navy was determined that the trial be a success.

"The behavior of some of my shipmates needed to be adjusted," she said. "That adjustment was dealt with swiftly, and quite properly, in my view."

And though a challenge, the Navy was truly rewarding: she'd found her calling. As her ancestors before her, she spent considerable time sailing. During her years at university, she was at sea from April through September.

Her aspiration was to be a chief engineer. In 1989, she became the first female chief engineer for the Navy's minesweeping class.

"That means I was responsible for propulsion and hotel services: all the running water, electricity that services the ship," she said. "I was responsible for managing a crew of 12 in a 24/7 operation on a military warship."

A minesweeper is designed to go no more than 12-24 miles offshore. From Halifax, Nova Scotia, Wang patrolled up and down North America's east coast seaboard. From Victoria, British Columbia, she patrolled as far south as San Francisco and as far north as Alaska.

"The Navy taught me the importance of structured communication," she said. "Being crystal clear, with no doubt as to your wishes and how you want them executed."

That was bolstered by lessons from her lawyer father on how to take a position and articulate its pros and cons. Further: "To distill a problem statement into a manageable course of action, and then go execute."

The Navy is where she was able to channel her natural inquisitiveness: "I very much like to understand how things work."

It's also where she learned to deal with high-pressure situations during recurrent, performance-based training, conducted under challenging conditions so that when the real emergency happened, the crew would be ready.

"The perception is that the military is so rigid, with so many rules," she said. "But at the end of the day when there's an emergency—that's the most creative, most inventive time you'll ever be as a human being."

She's applying that same creativity and inventiveness to her role today. As CTO of IBM Services Canada and IBM Distinguished Engineer, she leads a team that partners with the world's leading enterprises to establish reliable IT infrastructures that modernize and optimize critical business processes. Here, co-designed strategies and collaborative innovation with clients are the norm.

Notably, Wang was recently awarded a patent for server orchestration, resulting from a project for a large Australian bank. Though the process of building a server doesn't change, you can creatively examine the techniques of automating the building process to free up time, she explained.

Her team took the skills used in coding and scripting—used in app development—and applied those paradigms to building a server. The result: a seamless end user experience with a fully compliant server, with all the rights agents, built in under two hours—versus the usual three weeks. Wang understands the criticality of trust, both in partnership and technical execution.

"The key word there from our perspective is compliant," Wang said. "Compliance means we build this operating system, with this middleware, with this database, with a pre-approval tool set that's in this contract, connected to this IP address and registered in the IBM compliance registry."

"I don't want to be doing these boring, remote, rote tasks over and over again," she said. "A machine should free me up to do more intellectual things."

For Wang, those include living an authentic life.

"Where I am right now, my personal journey is essential," she said. "I spent the first 35 years of my life hiding."

The military, though welcoming of women when she joined, didn't want gay women (or men, for that matter). Some of her friends resigned and left due to concerted efforts, which kept her "very, very far in the closet."

That changed three years ago. On assignment in Melbourne during Pride Month, she came out to family and friends. Her parents were relieved, she said, "because they could see my relief in knowing I didn't have to hide anymore."

"I wasn't authentic to myself until I decided to come out," she said. "Being authentic, it's so important."

She extends that to all aspects of self. "Whether you're having a goofy moment or telling corny jokes, we're not machines. I'm in a boardroom with people for 10 hours a day. I don't need to hide," she said.

That freedom lets her focus on her family, her parents, her wife, her work. "Time is so precious," she said. "It's extremely important to be present and know where your priorities are."

In an emergency, every second matters

Written by Justine Jablonska

"9-1-1. What's your emergency?"

Jennifer Siracusa spent 14 years answering 9-1-1 calls. She spoke to thousands of citizens, paramedics, and firefighters, providing life-saving instructions over the phone and radio.

"People are living today," she said, "and have fulfilled lives and families because of operators" like herself.

In each call, she had just seconds to make quick decisions that would ultimately affect lives.

An estimated 240 million 9-1-1 calls are placed in the US annually. Answering them is a considerable responsibility with significant consequences. It's also a highly complex process.

"What people think is a simple medical call in the civilian world touches multiple people in the 9-1-1 telecommunicators' world," said Jay English.

An engineer and former 9-1-1 Director who served in the US Air Force, English is the Chief Technology Officer of the Association of Public-Safety Communications Officials (APCO) International. APCO International is the largest association of public safety communications professionals providing more than 30,000 members with expertise, professional development, technical assistance, advocacy, and outreach.

"Every incident is complex in a different way," English said.

Both he and Siracusa, APCO'S software sales coordinator, have deep experience working in emergency communications centers (ECCs), which handle inbound 9-1-1 calls and dispatch first responders.

A motor vehicle crash with minor injuries, for example, requires police, fire, and EMS response: three disciplines, all requiring different sets of information. Police need to know where the vehicle is, whether it's stopping traffic, and if there's a criminal infraction. Firefighters need to know whether they'll be cutting anyone out of the car. And EMS needs to know the condition of the patient(s).

One telecommunicator is responsible for fielding those three sets of questions and dealing with a multifaceted response tree, all in an extremely time sensitive situation.

"Every second we save in assessing the situation, and every second we save processing the call efficiently and getting accurate information out to the responders equates to how quickly the response occurs," English said.

And that's where IBM comes in, partnering to provide the APCO IntelliComm™ solution supported by Watson Analytics. IntelliComm works to ensure telecommunicators receive the most appropriate information in order to give rapid, consistent, and customized instructions.

Designed to be used by public safety telecommunicators nationwide, IntelliComm includes electronic guide cards that can be adjusted by agencies to meet their specific needs. Additionally, IntelliComm gives telecommunicators the ability to handle multiple aspects of an incident (law enforcement, fire, and EMS) within a single application that is easy to navigate and manage.

IntelliComm's potential is multifold, according to Siracusa and English.

When Siracusa first began working as a telecommunicator, she used paper flip cards with printed instructions. That's still the case in some ECCs. But even centers that have gone digital still work on a card-based desktop system that's not integrated with other systems. There's often no ability to toggle back and forth between emergency responders' disciplines. One button can send a telecommunicator to the wrong form or question.

With IntelliComm, "the tools are right there," Siracusa said. IntelliComm automates various processes that were previously manual—many of which impact the quality assurance (QA) process.

Quality assurance has always been an imperative for ECCs. "We learn from our mistakes," English said, "and from what we do right."

Legacy systems have typically been able to QA just 10 to 20 percent of calls received due to bandwidth and time constraints. Focusing only on certain call types or criteria can cause ECCs to lose sight of the big picture.

"One of the things IntelliComm automates is a large part of the QA process," English said. "It takes the call information as detailed in the IntelliComm application and passes it into the QA process automatically."

That gives ECCs the potential to verify every single call, and the ability to verify a much larger variety of calls.

In Siracusa's time as a supervisor, she noticed that the calls being QA'd were of a similar nature—cardiac calls, for example—leaving the center and staff without insights into how they were handling other types of calls.

"Given the opportunity to QA up to 100 percent, we'll be able to point out not just where we're lacking, but where we're doing well," Siracusa said. "In this world, we tend to notice what we do wrong."

The opportunity to catch it all—failures and successes—will also help with job retention.

"From a management perspective, you always hear about the negative," English said.

Sharing what an employee did well will motivate and retain employees. There's value in showing how changing the tone of voice, for example, made a positive difference in a given situation.

For APCO, IntelliComm is just the beginning. As Watson helps telecommunicators assess calls and provide accurate information in real time, data will be aggregated and analyzed with Watson Analytics—Watson will learn based on successful and unsuccessful outcomes. In the future, those analytics will provide ECC directors critical feedback in near real-time.

Additional future capabilities can also include real-time tone and sentiment analysis of callers and telecommunicators. If a call escalates or deteriorates, the system will automatically notify a supervisor (currently a manual process).

"Telecommunicators are the professionals who are saving lives. APCO's passion for these people is so strong," Siracusa said. "Everything we have, everything we do, is for them."

with Isabel Mestres

Written by Justine Jablonska

"We all have a role to play and we should all work together openly."

Isabel Mestres has lived, studied, and worked around the world. Barcelona-born, she's fluent in four languages (Spanish, English, French, German), and has worked for major corporations across continents. In her current role as the Director of Public Affairs of the City Cancer Challenge, she's bringing together public and private stakeholders to increase access to quality cancer treatment and care services in cities around the world. Mestres spoke with Industrious about how she's mobilizing partners from city leaders and governments to NGOs, UN agencies, and domestic and international businesses.

In your work, you bring together governments, businesses, and NGOs. How do you foster dialogue among so many different individuals and agencies from both private and public sectors?

It's as simple as bringing the right people, meaning decision-makers, to the table around a shared vision. In our case, the vision is a world where cities deliver quality, equitable cancer care to save lives.

This vision can't be solved by one sector alone. Knowing that resources are limited, and that it's a collective responsibility to use them effectively, joining forces and playing to our different strengths allows us to work together and as effectively as possible to deliver impact.

This is only possible by using a participatory and transparent approach because it fosters a greater sense of ownership and involvement.

We all have a role to play and we should all work together openly.

You launched the City Cancer Challenge in January 2017. Two years into the project, what has surprised you most?

A common theme we found in the first cities was that most of the stakeholders had never had proper discussions together. Each was working in silos, often with mistrust toward other stakeholders—public and private hospitals, for example.

When we bring everyone together through the City Cancer Challenge, we find a huge amount of willingness and enthusiasm to work together, as well as an understanding of the value of this collaboration.

How does the City Cancer Challenge help address cancer?

Launched by the Union for International Cancer Control (UICC), the City Cancer Challenge builds self-sustainable communities within and between cities around the world to address the fundamental complexity of cancer. That means connecting the diverse people committed to cancer care in their cities with each other and giving them the tools and processes they need to learn, innovate, and succeed. By stabilizing structures for collaboration, measuring change, and evidence-sharing, we empower local leaders to make lasting impact.

What's one action you recommend for individuals who, similar to you, need to bring together multiple stakeholders?

Know your stakeholders. By doing an in-depth stakeholder analysis, you can better understand who your stakeholders are, what their strengths are, and where capacities need to be strengthened. This way you can actively foster the equal participation of all the stakeholders by building capacity and trust to make a lasting impact.

Most people in Vietnam don't have a bank. Techcombank wants to change that.

Written by Jared Kinsler

Vietnam ranks as one of the fastest-growing economies in the world, with a booming middle and upper-income population reminiscent of China in previous decades.

But 71 percent of the adult population doesn't have a bank account, according to the World Bank 2017 Global Index. And 39 percent of Vietnam's adults save money outside the formal sector. Another 65 percent send or receive payments outside the formal system and pay school fees or utility bills in cash.

For nearly three-quarters of the Vietnamese population, being unbanked comes with a host of issues. Everyday transactions usually free with a bank account—check cashing or sending money electronically—are costly. Receiving money can take weeks because of extensive identification processes. Payday lenders and prepaid card suppliers that claim to help their clients often end up preying on their financial vulnerability.

So why do so few Vietnamese have bank accounts? A number of factors are at play. For millions of adults, banks are located too far away from their homes. Others find that they don't have the necessary documents to open an account, while some feel the costs of maintaining an account are too much to bear. There's also a lack of trust generally in the financial sector.

Nevertheless, banks are finding innovative ways to serve the unbanked of Vietnam.

"We have a great opportunity to bring banking to a whole new generation of people and help improve their financial lives," Chester Gorski, Techcombank's chief technology and operations officer told Industrious.

To serve Vietnam's unbanked, banks first need a way to reach them. Fortunately, cheap smartphones, tablets, and phone service subscriptions are bringing millions of Vietnamese online, and offering a way for the banking industry to access the underserved and underbanked people of Vietnam.

Techcombank, one of Vietnam's leading commercial banks, saw an opportunity to position itself as the go-to bank for this new generation of mobile consumers by providing a new suite of low-cost and easy-to-use digital banking options.

"We have lots of opportunities to bring banking to customers, for them to transact with banks through mobile phones," said Ng Teck Huat, Techcombank's application development director.

For new customers to make the most of the new offerings, however, Techcombank recognized it needed to transform both its IT infrastructure and the way its employees worked with that technology.

"Technology is only one part of the picture," said Gorski. "We were also looking to drive a broader cultural change in the IT department."

Techcombank undertook a rigorous selection process to find the perfect technology fit for its needs. First and foremost, it needed a mobile-first platform with the scalability, performance, and flexibility to handle large and variable workloads, as well as strong security and cost-efficiency. IBM LinuxONE seemed to be the solution the bank needed.

"The banking market in Vietnam is rapidly evolving, and IBM LinuxONE provides the fast, flexible foundation to support our growth trajectory and the dynamic needs of the future," Gorski said.

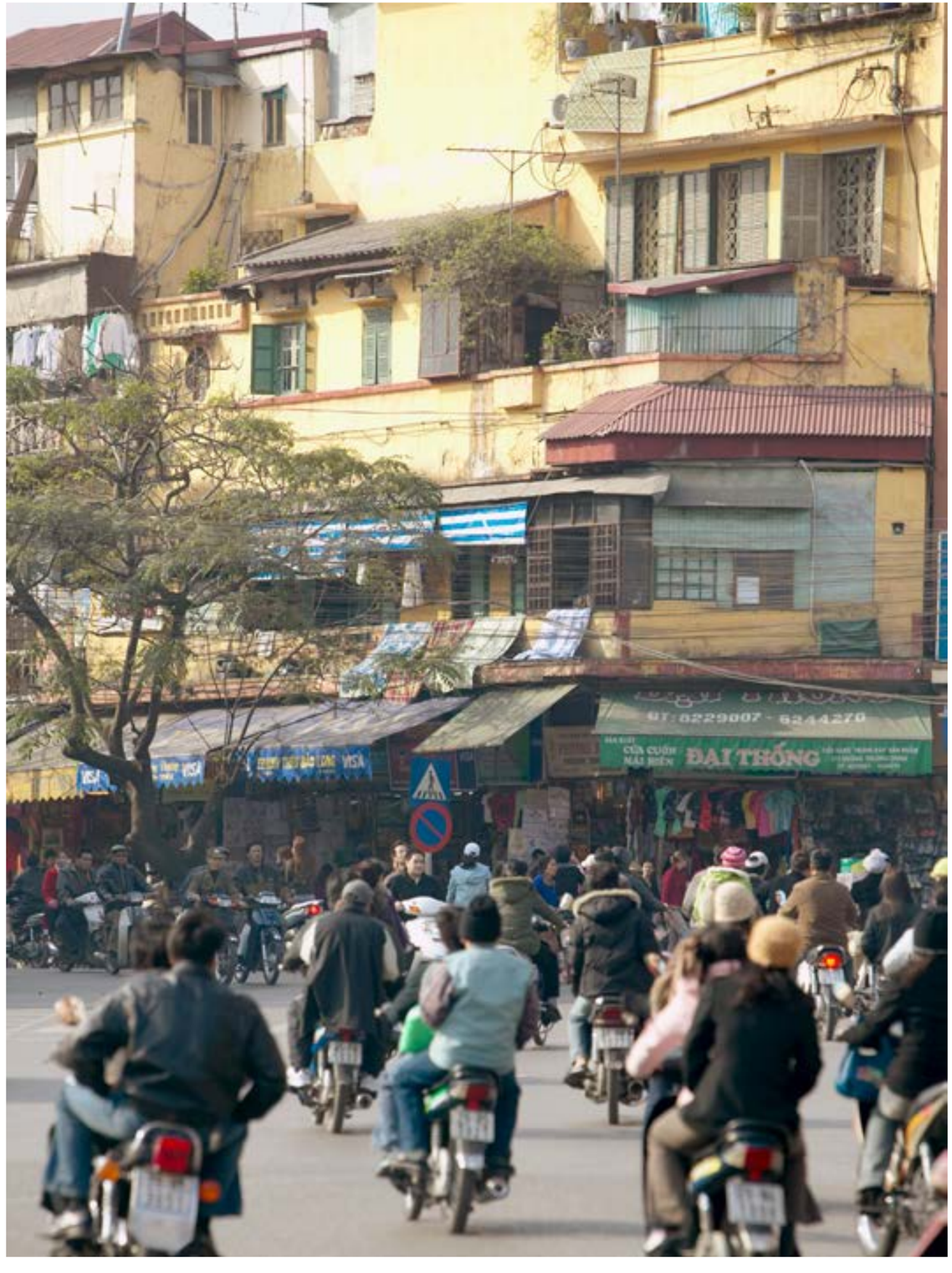
The Lunar New Year is one of the bank's busiest times, and it proved the perfect opportunity to test how LinuxONE absorbs dynamic workloads without compromising normal production performance.

"Even as transaction volumes increased to four times their normal daily levels, IBM LinuxONE delivered a flawless performance," said Gorski."We didn't miss a beat."

Since Techcombank shifted its focus to reaching Vietnam's unbanked, both the transaction volume and the value of its e-banking services have increased more than100 percent year-over-year from 2015 to 2017. Its customer base, meanwhile, is growing 30 percent year-on-year.

"For a platform to bring that many benefits has really helped Techcombank," Gorski said. "This is going to be a platform for us to continue to build on and grow as our markets and customers do."

To learn more, watch the video:
ibm.biz/IndustriousMagSystems



Telecommunications

Expanding volumes of data and video are straining network capacity, and transformative strategies to enable 5G must be enacted. The IBM Institute for Business Value interviewed 200 CSP executives from 24 countries, including 71 CxOs and divided respondents into innovators (those utilizing AI) and others (not utilizing AI). Here's how they responded.

Where do innovators use/plan to use AI?

80%
Predictive maintenance

76%
Self-diagnosis, automatic problem detection

67%
Improving traffic management

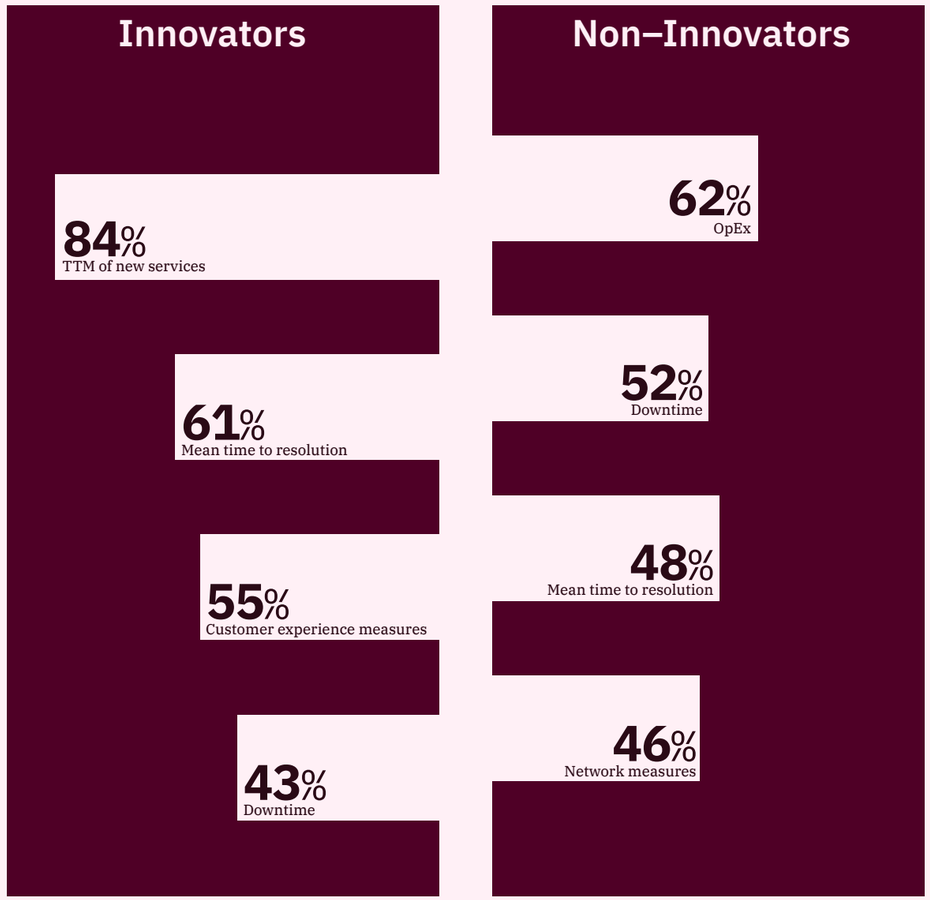
Advantages of open source for network virtualization

65%
More customizable

61%
Lower development costs

61%
Faster time to market for new products and services

What will success look like in automotion initiatives?



Recommendations:

Apply cloud and AI processes to improve business agility.
Bring designers and data analysts together to better act on citizens' needs.
Foster transparency and share your organization's vision with employees.
Hire data scientists and digital engineers who can communicate well.

For more telecommunications industry insights
ibm.biz/IndustriousMagTME

TELUS' CTO is tackling telcos' bad customer experience rap

Written by Jordan Teicher

What does a CTO have to do with customer experience? More than you'd think, according to TELUS CTO Ibrahim Gedeon.

"Technological superiority doesn't mean much if it's not tied with client experience and a global ecosystem," Gedeon told Industrious.

Traditionally, the responsibility to ensure great customer experiences at telcos has been relegated to customer-facing groups, while CTOs have focused on building services and networks.

But at TELUS, one of Canada's largest service providers, that hasn't been the case for at least a decade, since the company launched its Customer First program. The internal initiative called on everyone in the organization from frontline employees to managers and top executives to make customer experience a central focus, and to make "likelihood to recommend" rates—rather than industry standard NPS scores—the chief measure of success.

In an industry notorious for poor customer satisfaction ratings, the move was a bold—and necessary—one. Gedeon, who's been at the company since 2003, has taken the directive to heart. Today, he sees his work as CTO as an integral part of the TELUS customer experience.

"When we talk about client experience, it's not just cool technology. I think it's very critical to say, 'OK, what are they expecting from the journey?'" Gedeon said.

For many telcos today, initiatives to improve those journeys have included developing chatbots and virtual agents that allow customers to get answers to routine questions about billing and service 24/7. Others have focused on using AI to help route contacts to the best source of help, and to analyze contacts to assess their success.

TELUS has engaged in some of those initiatives, too, and Gedeon thinks they have "a fundamental role to play" in shaping great contact center experiences. But in his view, a telco's customer experience efforts must reach beyond boosting contact center resolution.

"Everybody thinks they've got chatbots and they're done," he said. "But they haven't actually improved the experience or the journey."

So what does true transformation look like? While great customer services can be broken at the contact center, Gedeon said, they can't be entirely built there. Good client journeys, he said, have to start with great services, which, at TELUS, are today more thoroughly tested and optimized prior to release than ever before.

"For the longest time, we didn't worry about the cost of care. It was part of doing business. We just built new services, added more stuff. Eventually it became the Leaning Tower of Pisa from a client care perspective," he said.

Issues inevitably arise, of course, even with the most carefully designed and tested services. But contact center representatives, he said, should not be instructed to simply "wait in locations for interactions with unhappy people." At TELUS, representatives look to record and measure positive feedback as well.

"That's why we call it the client experience, because we own it in good and in bad," he said. "So we started measuring who's calling for good reasons. We've started training people now to interact with our clients saying, 'Was it good?' And as a result, believe it or not, our customers now write letters thanking us."

Increasingly, TELUS is working on giving contact center representatives the tools to be proactive rather than merely reactive, and to focus equally on outbound and inbound communications. The key, Gedeon said, is better access to data.

By making near real-time network data, traditional CRM data, and external social media data available to contact center staff with help from IBM, Gedeon said, representatives can proactively inform customers about any disruptions and the work being done to address them, thereby eliminating the need for them to contact TELUS in the first place.

"The best call is the one that never comes in," said Perry McDonald, IBM's Analytics & Cognitive Sales Leader for the Global Telecommunications Industry, who works closely with TELUS. "If we see problems in the network, we should fix them and actually let customers know, 'By the way, the network is actually 10 MB faster because of investments we've just made in your neighborhood.'"

In McDonald's view, telco leaders like Gedeon are forging a "genuine paradigm shift" in the industry, after a long period of inaction and resignation. And as more telco customers come to expect the kind of experiences that companies like TELUS are providing, he believes more CTOs will see the benefit of getting involved in the business of customer care.

"If I look at the last half decade or so, the acceleration is both daunting and exciting," McDonald said. "The customer journey is at the core of it. Clearly, the operators that see that are going to thrive."

For more insights from Ibrahim Gedeon, watch our master class video:
ibm.biz/IndustriousMagTELUS

With AI-powered translation, industries look to speak every customer's language

Written by Jordan Teicher and Joseph Rakowski

When Danny May's passport was stolen during a business trip to China, he had to think quickly to try to recover it. So he downloaded a translation app on his phone, searched for some Chinese phrases that might help explain his situation, and approached a local policeman. It didn't go well.

"The poor performance of the translation app I downloaded led to the policeman going for his gun and my colleague running away in fear. Instead of saying 'hello, how are you,' I said 'hello, I love you,'" May told Industrious.

May knew he couldn't be the only person dissatisfied with the translation technology available in the market, so he decided to improve on it himself. In 2013, May founded a company, Lingmo, to do just that.

"The idea was to create a tool that allowed anyone to communicate in different languages," he said.

Competitor products, May noticed, focused on the kind of word-for-word translations that got him in trouble back in China. If he could harness speech recognition technology to make translations contextual, he figured, he could develop a more powerful and useful translation tool. To make it a reality, he turned to IBM's Watson Language and Speech API, and started getting the results he wanted.

"Speech recognition powered by AI allows us to be 50 percent faster in our training. It allows the translations to be contextual, become smarter, and detect a multitude of dialects and nuances," he said.

Lingmo's first products—an earpiece, a smartwatch, and an app—focused on helping individual travelers communicate anywhere in the world. But in the last six months, the company has expanded its offerings and gone after new kinds of customers. Now, May is bringing his translation technology to enterprise clients in the retail, airline, healthcare, hotel, and travel industries.

"The big players in the translation industry focus on apps and solutions for the consumer market, whereas enterprises need a tailor-made solution for their terminology," he said.

In customer service, May said, communication is crucial. And in an increasingly interconnected age, companies need to speak to customers wherever they may be, no matter what language they speak, to earn their business.

"It comes down to customer experience. They want to retain their customers," he said. "If you can't communicate with your customers you're not going to get a sale."

Today, big businesses are using Lingmo technology in their live chat-based customer service interactions. A customer can type a question in Arabic, for example, and a customer service rep can respond in French. Lingmo, translating in between, allows them both to understand each other.

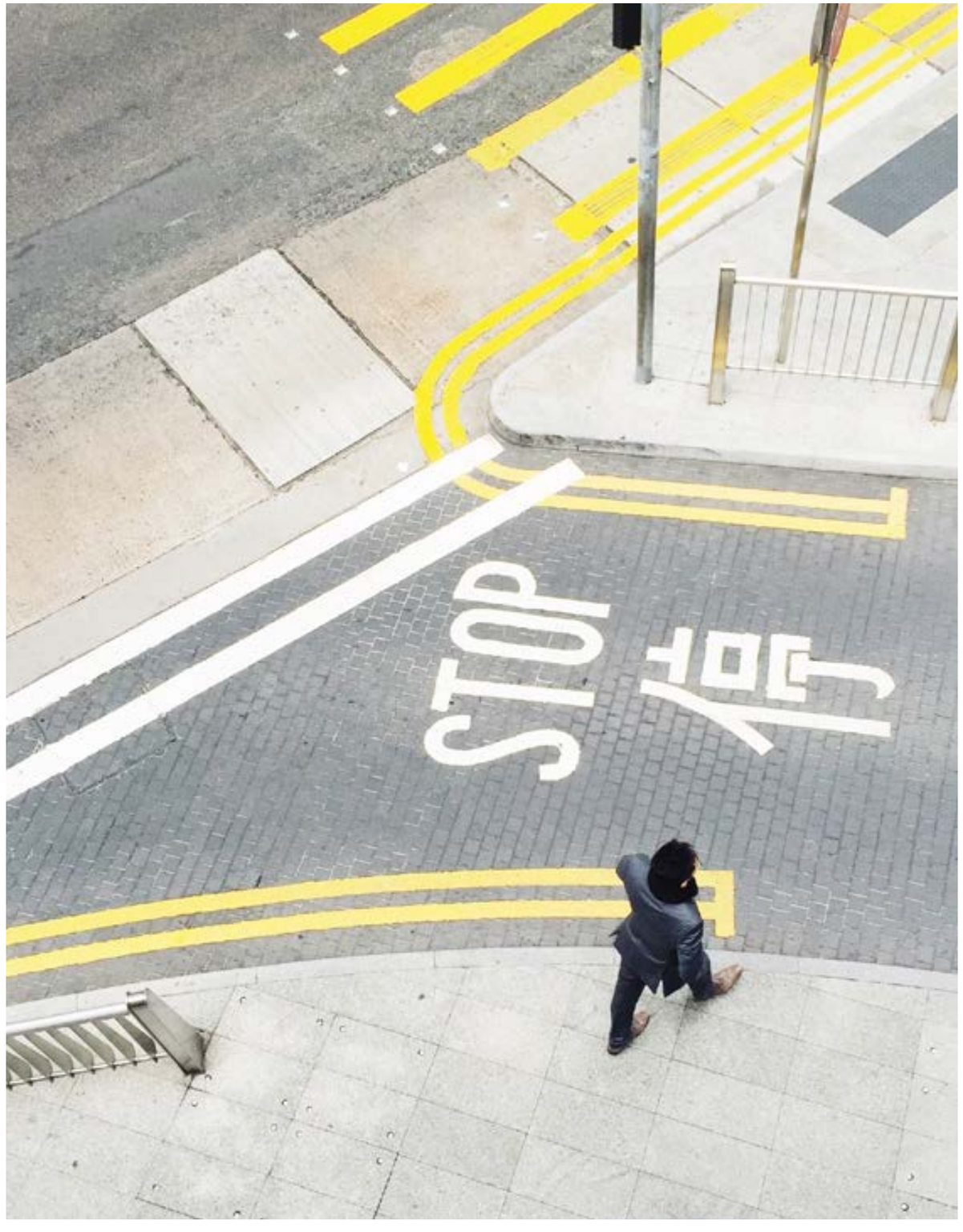
"The customer can speak whatever language they're fluent in and the rep can do the same. It's like they're communicating in the same language, but they're speaking two different languages," he said.

In the airline industry, for instance, companies are already seeking ways to empower front-line employees to better serve customers. Lingmo's technology real-time voice translation proves useful in that effort. With it, an airline representative can easily make an announcement for a passenger in the airport who speaks another language.

"They speak through the microphone and it goes through the network. The network is connected to the cloud, and sends the required translation to our system. We translate it, and it comes back over the speaker within the airport so they can hear," he said.

For May, Lingmo began as a way to avoid the kind of personal predicament he experienced in China. But today, May sees his company as a force for helping people and businesses not only survive but thrive in a world where there are many languages and a universal desire to understand and be understood.

"Whatever we do, there's always going to be a need to communicate," he said.



Electronics

Electronics continues to transform from a device-driven industry to a data-driven industry. The IBM Institute for Business Value examined the responses of electronics executives from across the globe to understand the impact of data and platforms on the industry's future.

41%

Say platform-oriented digital giants are leading disruption in the industry

40%

Companies are actively building or considering a platform-based business model

40%

Say AI-driven IoT will reach fuller potential within the next few years

Electronics executives across the globe

23%
Understand how to use AI to improve business outcomes

32%
Experience a challenge scaling IoT platforms

40%
Think AI will impact their products and services delivery model in the next two-to-three years

52%
Think AI will impact their research and development efforts

Recommendations:

Transition your hardware design and development processes and teams to include a significant focus on data, insight design, and interfaces.

Leverage AI to provide personalization, thereby increasing compelling experiences.

Define underserved users and customer needs, assess how to meet these with data and services, not features and functions.

Continually align on business values and practices, especially security and data usage, as the world evolves.

For more electronics industry insights:
ibm.biz/IndustriousMagElectronics

Interbrand's Tom Custer has a front-row seat to the store renaissance

Written by Jordan Teicher

When Tom Custer first began working in the retail industry more than 20 years ago, big brands reigned supreme as they expanded their footprint of large stores around the world.

Times, he said, have changed. Now, unimaginative brands that sought physical growth above all else are closing up shop as customers move to more convenient and exciting alternatives.

"I think some retailers emphasized what may have been a real estate strategy, where you have to be in every suburb or every block to be close to customers," Custer, the Executive Director of Consumer and Retail Brand Experience at the consultancy Interbrand, told Industrious. "I think some of those retailers are now facing challenges and they're reassessing their strategy."

Today, Custer spends his time with retailers pursuing a new approach to brick and mortar, one that acknowledges changing consumer habits and emerging technological capabilities. Retailers today, he said, believe stores are important; they just have different ideas about what role the store plays and how they should support their brand experience.

"Today and going forward, I think we're going to have smaller stores, different formats, and more experiential retail," he said.

Custer's daily experience confirms some of the latest research in the industry. According to an IBM-sponsored report from Retail Systems Research's Brian Kilcourse and Steve Rowen, the store is no longer an island of retail, but rather a vital component of the overall brand experience. Today's best-performing retailers, the authors found, are by and large not closing stores. Instead, they're exploring new ways to make those stores more convenient, more personal, and more inviting—and they're using technology to make it happen.

"It's clear that retailers recognize the importance of the store, both now and in the future. Surprisingly few plan to reduce their store counts. Rather, they see opportunity on the horizon. While over-performers are more eager to move forward, even their more poorly performing counterparts recognize that a renaissance is afoot," Kilcourse and Rowen wrote.

At Interbrand, Custer works with many of the forward-looking retailers leading that renaissance as they seek to attract new customers or reposition themselves in the market. In his experience, those retailers are no longer aiming to make stores look and feel exactly the same regardless of the community they serve. In a world when fast order fulfillment is just a click away, he said, his clients are looking to offer personalized content and more localized products to set their stores apart from physical and digital competitors.

"It's easier to design a standard prototype store and then just roll it out to a thousand stores. It's harder to create that 'store of the future' brand experience and have these points of difference—localization, personalization, etc.—as you roll it out," he said. "But from a design perspective, that makes it much more exciting."

Retailers are challenging themselves, Custer said, by fundamentally rethinking the role their physical space plays in their business. Companies like Starbucks, for instance, are investing heavily in their mobile apps and transforming their spaces to better serve as distribution centers for in-store pickup. Others are taking the opposite approach, he said, by making stores less transactional and more fun. At Sephora, for instance, the store is as much a laboratory for experiencing products as a place for selling them. Technological innovations—like an app that allows customers to try on products virtually—can make those experiences highly personalized.

Both kinds of store models, Kilcourse and Rowen argue, require customer-facing employees to be trained to serve new functions. Despite predictions that retail will have fewer customer-facing employees in the future, they find that the best-performing retailers see their role only becoming more important. Custer agrees.

"It's not just about the transaction. Especially at big box retailers, it could be more of a consultative role. Target, for example, is testing different versions of a beauty concierge as they grow to compete with other beauty retailers like Sephora and Ulta," he said. "The role of that employee has to change."

Those roles—like stores themselves—will likely shift further in the years to come, Custer said. But in this moment of extraordinary disruption in retail, the ability to take those changes in stride is not just an asset—it's essential for survival.

"The retailers that try new things are the ones that succeed because they're evolving, they're thinking about lifestyle changes and habits, and they're testing things for the future," he said.

On the road to a better cybersecurity posture

Written by Lauren Jensen

For more on the X-Force Command Cyber Tactical Operations Center:

ibm.biz/IndustriousMagXForce

The IBM X-Force C-TOC provides a gesture-controlled cybersecurity watch floor, data center, and conference facilities that can accommodate two dozen operators, analysts, and incident command center staff.

Securities

"Knowledge is of no value unless you put it into practice."
—Anton Chekhov

The repetition of drills can be seen in many areas, from sports teams to the military to first responders. But why do these groups continuously practice? As individuals, each person knows their expected responsibility and role, but how everyone works together to accomplish a common goal can't be understood by theory alone.

The idea of practicing for a future event can also be applied to an organization's cybersecurity plan. No company wants to believe it will be the victim of a hack or breach, but the reality is not a matter of if but when. Preparing for this "right of boom," or the consequences of a cyberattack, is a necessary part of a business plan, but is often overlooked by organizations and not prioritized as a top business necessity. Many executives believe they have an incident response plan in place, when in fact the plan barely scratches the surface and leaves out key stakeholders and decision points.

Cybersecurity teams have historically been focused on detection and protection against cybersecurity incidents. As the threat landscape has evolved, however, organizations are now recognizing the need to plan and rehearse their response to security incidents as well. IBM's 2018 Cost of a Data Breach study found that companies that are able to respond to incidents effectively and remediate the event within 30 days can save over $1 million on the total cost of a data breach—yet less than 25 percent of professionals surveyed say their company has a coordinated incident response plan applied across the organization.

IBM Security has identified incident response and preparedness as an underserved segment of the cybersecurity market. In 2016, IBM developed the industry's first Cyber Range for the commercial sector. Since then, IBM has taken more than 2,000 people through its immersive cybersecurity preparedness training in its facility in Cambridge, Massachusetts.

With an increased demand for these services, IBM Security has launched the IBM X-Force Command Cyber Tactical Operations Center (C-TOC), a fully operational security operations center on wheels, modeled after tactical operations centers used by the military and incident command posts used by first responders. Along with IBM's own cybersecurity expertise, the C-TOC trains teams on the essentials of leadership in crisis—from moving out of the organization's day-to-day structure and into an incident command hierarchy to thinking a step ahead to anticipate an attacker's next moves.

"Experiencing a major cyberattack is one of the worst crises a company can face, and the leadership, skills, and coordination required are not something you want to test out the first time when you're facing a real attack," said IBM Security's VP of Threat Intelligence Caleb Barlow. "Having a mobile facility that allows us to bring realistic cyberattack preparation and rehearsal to a larger, global audience will be a game changer in our mission to improve incident response efforts for organizations around the world."

The C-TOC training includes a "Cyber Best Practices Laboratory" with real-world examples based on experiences with customers in the Cambridge Cyber Range. It also enables companies to participate in an immersive, gamified cyberattack that allows teams to test incident response plans under a realistic, high-pressure simulation.

With the launch of the mobile X-Force C-TOC, this training and IBM Security's expanded mission are being taken directly to clients around the world to provide onsite preparedness and the potential for supplemental cybersecurity services. Organizations can see how a cyberattack can affect their business and the impact the breach can have on their systems, people, processes, and brand reputation.

No industry is immune to a potential breach, but every company can be ready for when an incident occurs so the impact can be reduced and not become a true worst-case scenario.

What we don’t talk about when we talk about AI

“AI has profound implications for all of humanity,” said tech CEO Mia Dand. “That’s why diversity and inclusion are so critical to AI.”

Diversity isn’t just an aspiration in the AI field—it’s today’s reality. Around the world, she said, women are researching and uncovering biases in AI systems and building their own fair and accountable systems. To highlight those accomplishments, Dand recently published a list entitled 100 Brilliant Women in AI Ethics to Follow in 2019 and Beyond.

“I created the list to give a voice and platform to brilliant women working in this critical area of AI,” Dand said. “Women are making significant contributions on a global scale to the development of ethical and responsible AI.”

It’s a critical time for AI, and thus an important time to ask hard questions about how AI is developed and used. Inspired by Dand’s list, we reached out to women who work in the field of AI ethics to ask the question, “What conversations about AI are we not having—but should?”

“As businesses continue to adopt AI and rely on it to support key decisions, it’s crucial that they’re able to explain the outcomes that AI produces. Otherwise our employees and customers won’t be able to trust the systems, and we’ll see growing distrust around AI adoption.”

Rashida Hodge
VP, IBM Watson Group

“In recent years, the AI community has, at length, been discussing ethics issues that need to be considered to achieve trustworthy AI: fairness, explainability, and data policies being the most significant. It is now time to also discuss and implement concrete solutions for some of these issues, as well as additional mechanisms and tools to evaluate and audit AI services. The goal is to achieve transparency on the design choices made to equip AI with its capabilities, in order to achieve a justified level of trust in the technology.

There is also a strong need for discussions on how to help non-experts understand AI capabilities, issues, and solutions, and how to support AI users in how to best use this technology to make better decisions.”

Francesca Rossi
AI Ethics Global Leader, IBM

“People are asking great questions about AI—bias in AI training data and in AI models, privacy and security with AI data, and how to treat data ownership when training AI models across the same industry opportunities. We’ll definitely start hearing more about how and when it’s appropriate to ‘reset’ AI as its adoption grows. AI learns from historical information and ideally continually learns and adjusts based on new data as well. If a new factor or new information comes in that is found to be beneficial in driving the AI, it’ll be dwarfed by the larger existing data sets. So the resetting is more about making sure the information isn’t skewed.

I’d personally like to understand more about how AI models can become multi-modal, allowing for multiple factors to come into play without slowing down the speed of the insights.”

Lisa Seacat DeLuca
Distinguished engineer & master inventor, IBM Watson IoT

“Artificial intelligence isn’t replicating human intelligence. This isn’t man versus machine, or even man augmented by machine. It’s a new kind of reflection or refraction of our humanity. When we think about artificial intelligence that way, all sorts of interesting questions result. What is missing from the data? How much of our experience can AI actually mirror? What unintended consequences do we need to anticipate resulting from systems design to optimize performance against a clear objective? And what might happen if our systems launder human prejudices and biases at scales beyond what’s existed before? In short, what can we do to make sure AI builds the future we want instead of the past we’ve tried to move beyond?”

Kathryn Hume
VP product and strategy, Integrate.ai

There are many hurdles to overcome: unexpected outcomes due to bias, lack of data representation, determining or access to the right datasets. The larger investment will come from the adjacent impacts of implementing AI: education, governance, retraining, and culture. This will all have spillover effects already impacting policy and legislation and how business will be mandated to make these changes.

Hessie Jones
Founder, ArCompany

“Bias can be introduced into AI not just by lack of diversity or by unintentionally absorbing the bias that’s already in culture, but also by deliberately inserting it to deliberately disadvantage part of the population. This is partly why we need to maintain accountability for all information and communications technology (ICT) systems, regardless of whether it’s currently fashionable to label them ‘AI.’”

Joanna Bryson
Computer scientist at the University of Bath, affiliate at the Princeton Center for Information Technology

“AI is being heavily used in HR applications today. The questions we should all be asking are: What is the outcome the AI is trained for? Is that outcome ethical? Did subject matter experts help train the system? Was the data used to train the AI diverse across multiple vectors? Is the rationale of the recommendation from the AI clearly explained? Without that clarity, the AI will magnify the biased decisions from the past. With the right answers, however, we will be able to positively impact business outcomes and employee experiences for years to come.”

Aarti Borkar
VP for Offering Management & Design
IBM Watson Talent and Collaboration

“How do we leverage different professional disciplines for AI design? It’s our responsibility to create channels for meaningful contribution that are inclusive of mixed economic, social, and philosophical perspectives.”

Milena Pribić
IBM designer, AI design

“The conversation we’re missing is an informed public conversation, so that more people can have a say in the ways technology is used. Automated decisions are a part of everyday life for most people—whether it’s deciding the price we pay for something, the content we see, or the school our children are allocated—but most people don’t know how those decisions are made or what data is used. We’re never going to be ready for widespread automation if more people don’t have a chance to shape technology or recognize its effects.”

Rachel Coldicutt
CEO, Doteveryone

"We aren't adequately talking about when not to use AI. As Frank Pasquale recently and memorably said, 'sometimes the best move in a game is not to play.' There's discussion of this in the context of automated weapons, but it's largely missing from most other conversations about AI regulation.

Here's why this is important, from a legal perspective: AI is, for a number of reasons, challenging but not impossible to regulate. When legal regimes try to effectively govern complex, risky systems such as AI (think nuclear power plants), they often, for good reason, try to address problems before they happen and on a larger, system-wide scale, which means a lot of risk analysis and balancing, and less to no attention to individual rights or individual impact.

There are some subject matter areas where this governance approach has been historically acceptable. Then there are other subject matter areas, like decisions to imprison people, where our concern for individual rights is much higher and this mode of regulation isn't understood to be appropriate. Because governance is the mode of regulation most likely to be effective in solving a lot of our concerns about unfairness and discrimination and AI, this suggests that we should be talking more directly about when a governance approach is not appropriate, which should guide our conversation on when not to use AI at all."

Margot Kaminski
Associated professor at University of Colorado Law School, Affiliated Fellow at Yale Law School's Information Society Project

"We need to move the discussion of AI ethics from just expressing moral feelings and policing for unethical behavior to the collaborative, creative, and meaningful ways that ethical thinking can complement and even enhance innovation and development in AI."

Cansu Canca, Ph.D.
Moral philosopher, Director of AI Ethics Lab

"We are still debating the need for ethics in AI when we should be having deeper conversations on how to integrate and implement responsible and ethical AI. Mindless adoption of any tech, especially AI, can only lead to disastrous outcomes for humanity."

Mia Dand
CEO, Lighthouse3

"More focused conversations are needed on what exactly inclusive and responsible AI means in terms of concrete business practices: what processes, systems, and new competences (beyond tech) should be in place to ensure sustainable innovation and connections to a broader system of corporate responsibility? How can diversity and a culture of continuous learning and development, including on ethical and responsible AI issues, be promoted across all company roles?"

Alla Kos
Responsible AI Practices

"In my book 'Artificial Unintelligence: How Computers Misunderstand the World,' I outline the ways that most AI systems simply reproduce the world as it is, instead of helping us move toward the world as it should be. It's important not to assume that because a decision is made by a computer, the decision is somehow the fairest or the most just."

Meredith Broussard
Data journalist, NYU professor

"We think a lot about how to shape AI and how, in turn, it might shape society, but we haven't reflected enough on the effect it will have on us as individuals, on our characters and attributes. As we slowly delegate to machines the decisions and tasks that until now have been the sole purview of people, what does that mean for our humanity? For example, as systems increasingly guide us in our choices—or take them on our behalf—could this erode our autonomy and our ability to make decisions successfully? Moreover, when we allow machines to make selections on our behalf, this seems to demand that our tastes remain stable and consistent. Might we become rather more dull and predictable as a species in a new, artificially intelligent and automated world?"

Fiona McEvoy
Tech ethics researcher, founder of YouTheData.com
San Francisco, California

"We should be having conversations about algorithm disclaimers similar to the ones in food and skin care products. In the case of AI, it should have disclaimers on the sample size that was tested on, where and what data was sourced, the percentage accuracy of the AI, and transparency in the demographic diversity (or lack thereof) of the scientists who designed the algorithm so that the user can manage their expectations when using and trusting the AI."

Dr. Lydia Kostopoulos
Tech ethics and strategy consultant

"Most conversations about AI are focused on autonomous systems, i.e. systems that can solve tasks on their own, with limited or no human interaction or involvement. More attention should be given to how non-autonomous systems could impact humanity and be built to improve human cognitive capacities. These include things like language translators, grammar and communication systems, navigational systems, and other 'cognitive assistants,' all of which depend on the interaction and input of a human in order to support their goals or interests. Non-autonomous systems have the potential to augment human cognition rather than replace it, hence they offer a real opportunity."

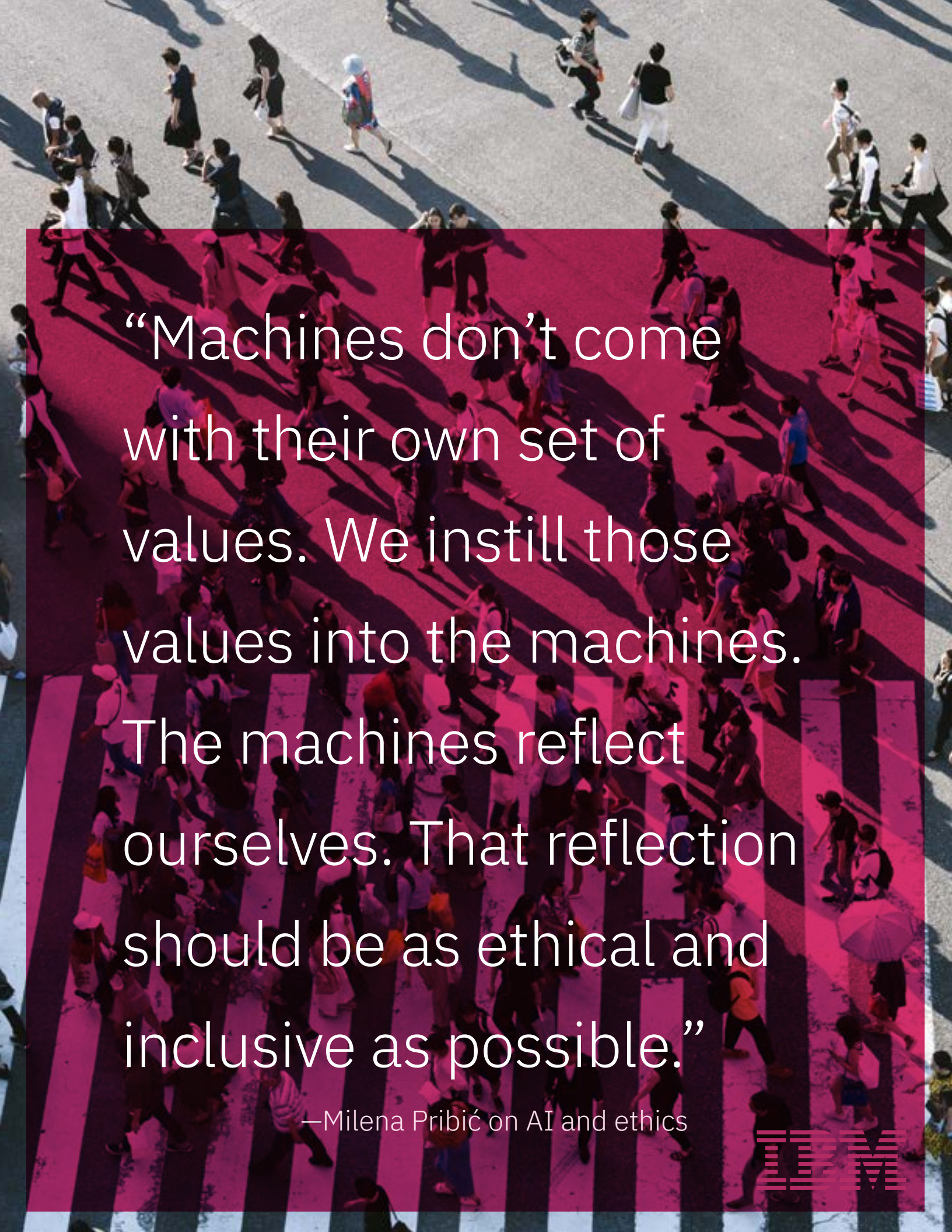
Karina Vold, Ph.D
Research associate at the Leverhulme Centre for the Future of Intelligence, Cambridge University

"Almost all of us experience a disability at some time. A person with a disability may not fit the patterns learned by AI systems. How can we ensure that our AI technologies treat everyone fairly, including those of us who are outliers?"

Shari Trewin
Accessibility User Research, IBM Research

"We need to talk more about implicit bias in the data sets that we use for training machine learning models. For example, many of our natural language processing tools were trained using the publicly available data set of 1.6 million emails that Enron executives sent amongst themselves in the two years prior to their epic collapse. That data set remains the largest freely available body of genuine emails in the world. But they're rife with sexism, racism, and the outright fraud that ultimately took the company down. Are these language models and underlying patterns of thought really what we want to encode in the future of AI?"

Caitlin McDonald
Digital anthropologist


“Machines don’t come with their own set of values. We instill those values into the machines. The machines reflect ourselves. That reflection should be as ethical and inclusive as possible.”
—Milena Pribić on AI and ethics
IBM