NEXT MAGAZINE

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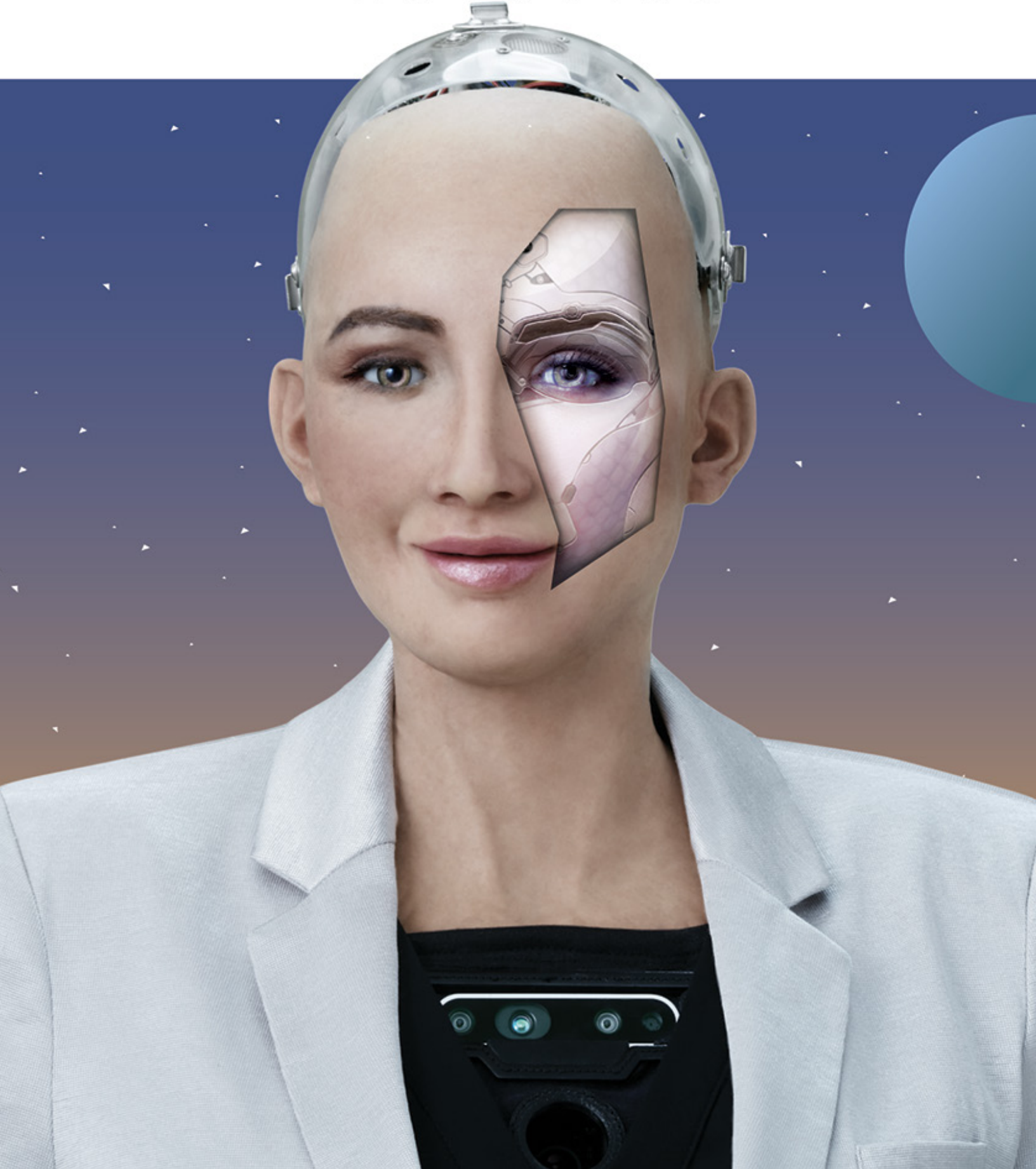


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Issue 7
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NEXT MAGAZINE

THE TEAM

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LETTER FROM THE EDITOR

"It's not a faith in technology. It's faith in people."
-Steve Jobs, Co-founder of Apple

Just as a common implement like a knife can be used for harm or for good, technology is no different. We've certainly seen this concept play out recently in stories of technological advancement such as those surrounding the robotic revolution taking place, which in turn leads to conversations around ethics—including how robots that can seemingly "do it all" impact human jobs and lives. Robots are often scrutinized in a harsh light when it comes to what they're perceived to be taking from humanity. But robots also are capable of significantly improving life. This issue features "helper" drones being used for reforestation, outsmarting poachers, and even delivering human organs (p. 34).

Our cover model, humanoid robot Sophia and the world's first robot citizen, shares how she's enabling changes in society to ensure that everyone can participate and benefit equally from technological advancements, serving as the machine ambassador for the United Nations Development Program (p. 42).

And what about the ones and zeros behind all of this technology? We don't necessarily equate "compassion" with coding. But after hearing about one organization's surprising mission to provide training on emotional intelligence and ethics so it infuses computer users' experiences, you may never look at the programs you use on a day-to-day basis quite the same way (p. 28).

Perhaps, in light of stories like these and so many more, Steve Jobs really did say it best: "It's not a faith in technology. It's faith in people." Technology truly does have the power and potential to change the world we live in—for the good of humankind.

Jordan McMahon
Director, Editor-in-Chief

OPINIONS

IT AUTOMATION

WON'T TAKE YOUR JOB.IT JUST MIGHT SAVE IT.

Welcome to 2020, where IT automation will, depending upon who you listen to, either make your life easier or put you in the unemployment line. In reality, how IT automation will impact you personally is entirely up to you. You can have a healthy attitude toward new growth and change, or you can maintain the status quo of your IT garden, pulling weeds and performing tasks manually and call it job security. However, refusing to migrate toward automation will not only reduce your IT department's efficiency and efficacy, it could also result in business stagnation and, ironically, job loss. Namely, yours.

While it's true that some forms of automation can and have laid waste to workforces (think robotics and the automobile industry), IT automation is nothing to be feared. Let me tell you why and what you can do to prepare.

You've been benefitting from IT automation for years.

Not too long ago, if you wanted to update your operating system, a kernel component, a module, or make any type of minor change, you had to download a bunch of executables, DLLs, extra files, and then modify the registry by hand. Nowadays, there are Windows Server Update Services (WSUS) and countless other package managers and tools that do the work for you. That's automation. Not only has it not taken away anyone's job, it has helped advance careers by freeing us from mundane tasks to focus on more valuable pursuits, such as developing advanced features, functions, and applications that serve the needs of the business.

IT automation alone is not the answer.

Today's IT infrastructure automation is often touted as a cheaper and easier way to manage your IT operations. In reality, it is rarely the least expensive route nor is it remotely easy. Take containers, for example. While it's true that you can do absolutely anything that you desire with tools such as Kubernetes, Docker, and OpenStack, you also have to throw a whole lot of people at the problem. The platforms and tools are constantly changing. Vendors deprecate key features you've come to rely on, forcing you down a different path, and requiring you to retrain your people. In other words, while IT automation makes us more agile and efficient, it will continue to rely on people who are willing and able to develop new skills.

Your processes may be holding you back.

Automation is only as good as your processes. I once worked for a very large enterprise that was the gold standard in their industry. We leveraged the most advanced technologies at the time to support thousands of developers working around the clock. We had virtualized infrastructure where VMs could be stood up and torn down on demand in a matter of minutes to support the changing needs of the business. That was the theory, anyway, and from a technical standpoint, it was quite possible. What held us back was our processes.

Our process for spinning up new VM instances looked something like this: a business user would submit a request for a new virtual machine, the operating system would be selected, storage target and type, network requirements, IP address, etc. All told, this should take about five minutes. Not so in a siloed organization with strict service level agreements (SLAs). According to our SLAs, each step in the chain was required to be completed within five days of the initial request. So, guess when each request was completed? On the 4th day at the 23rd hour and 59th second. With upwards of 18 steps in the process of provisioning a new server, what technically should have taken minutes took an incredible 90 days to complete! And we were using automation. As I said, the problem wasn't a technical one. We were suffering from a problem of process.

Get ready for smarter IT automation.

Regardless of how you manage your IT infrastructure today, by embracing automation as a stakeholder to success in 2020 and beyond, you can help to differentiate your business—and yourself. At the same time, investing heavily in automation tools will likely not deliver on its promises without you first examining and refining all of the various human processes you deal with every day. Here are some things to consider as you examine the role that IT automation may play in your environment:

Examine all the repetitive activities you currently perform manually.

Take a good look at the tasks you perform regularly, over and over again—not one-and-done activities, but things you find yourself doing more than once a day, or multiple times a week or month. Are mistakes being made when these repetitive tasks are performed? If so, can the errors be eliminated or minimized by employing a script, auto-complete, alias, REST call, or other form of automation?

Which processes take the longest and how long do they take?

Take our IP address provisioning as an example: whether being done by hand with an IP scan, using an Excel spreadsheet with a ping follow-up, or using an IPAM-type solution, the actual work didn't take very long. Our SLA process is what slowed us down. What's worse, executive management had no idea that there was a problem because according to IT's documented processes, "nothing was wrong!" If stakeholders are complaining about hold-ups, ask yourself why, and speak up if something doesn't add up. Because if you don't, who will?

Which tasks in a process take more time to complete?

Some tasks simply take more time than others, so it's important to document these. For instance, building a new operating system from scratch using the original ISO and then spending days to download Windows Updates, patches, applications, and the like are time-consuming tasks. Sometimes teams don't know they can download and install off of a newer revision and minimize the backend effort exponentially. Fortunately, standing up LUNs in storage platforms does not take the literal days or longer that it used to, and you won't find too many IT networking teams provision a router or a switch by typing in every command. Instead, they work off of a proven template. Which reminds me…

Are you using templates? When was the last time they were updated?

This almost speaks for itself, but you should be templatizing anything your organization has to do more than once. When you have tens or hundreds of identical assets in your organization, templates will not only make your work faster, better, and easier, they help avoid mistakes and put you ahead of the game when it comes to revisions and new versions.

IT automation is within your grasp. It always has been.

The more you take a hard look at your current processes and work to streamline them, the easier it will be when it comes time for you to adopt any of the tools from the ever-growing list of IT automation applications and technologies on the market. After all, wouldn't you rather focus on the things that matter most to your business—and to your career—instead of spending 80 percent of your time doing the technical equivalent of pulling weeds?

ABOUT THE AUTHOR

Keith Townsend is co-founder of The CTO Advisor, helping organizations navigate the challenges of digital transformation as they migrate from traditional to public/private cloud IT infrastructures.

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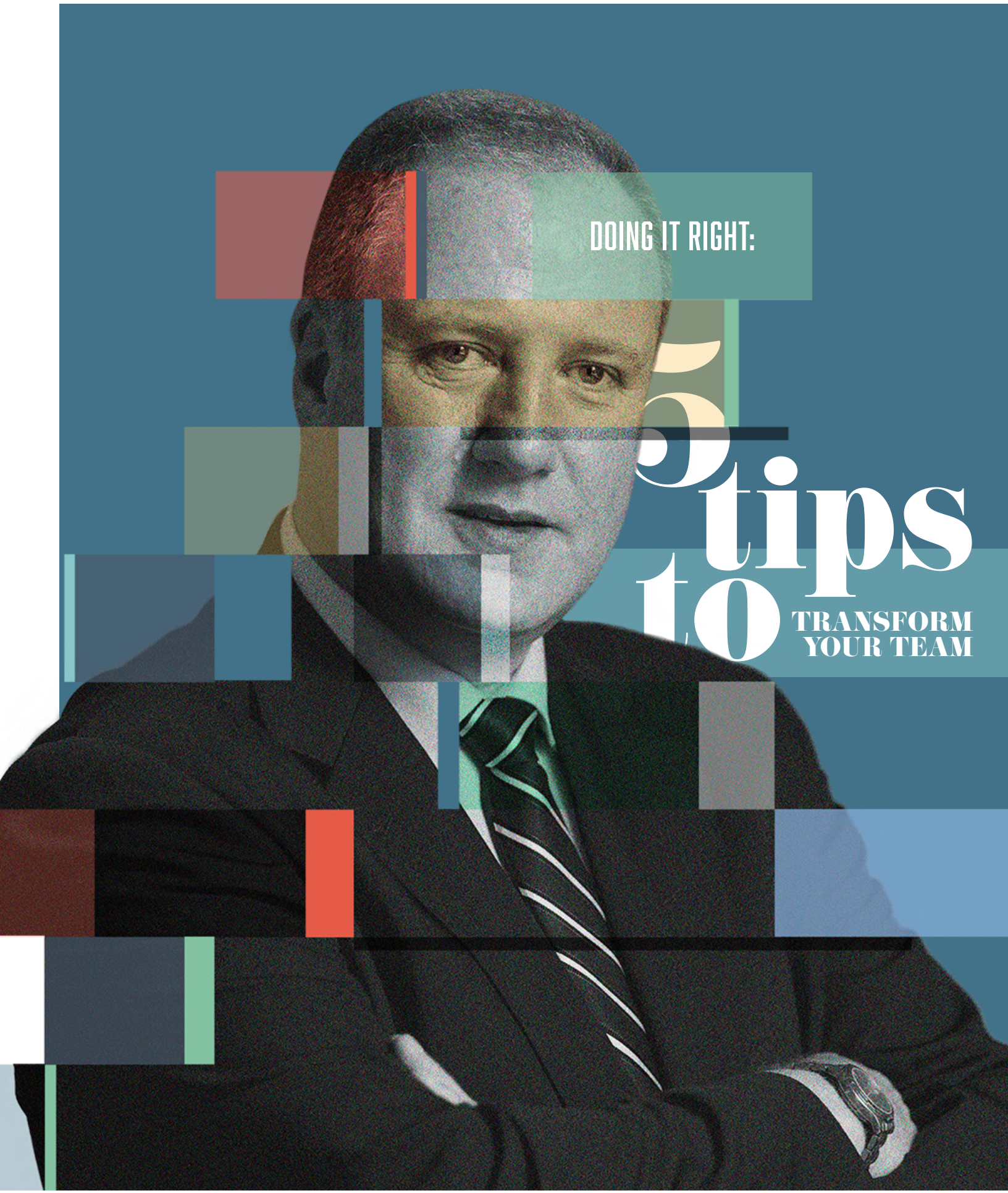
DOING IT RIGHT:
5 tips to
TRANSFORM YOUR TEAM

STRUGGLING WITH HIGH IT STAFF TURNOVER OR DISSATISFACTION IN THE RANKS? FIND OUT HOW TO GET BACK ON TRACK.

Enda Kyne knows a thing or two about transforming IT teams. In 2017, he joined Dublin-based FBD Insurance, one of Ireland's largest property and casualty insurers, as the Chief Technology and Operations Officer. While his primary mandate was to implement technology to leapfrog competitors and improve the customer experience, he also inherited management duties over a massive "lift and shift" project begun before his arrival that was struggling to make adequate progress.

Add to all of that an IT staff turnover rate that was much higher than average and mounting company-wide frustration with the IT team, and it was clear Kyne faced an uphill battle.

Kyne's experience of more than 30 years in IT—20 of those in consulting—helped him turn things around. The lift and shift of the old platform to the new platform was planned to be completed by the end of 2019. He implemented hyper-converged infrastructure as well as cloud technologies to enable the business to do much more than they'd originally planned for. He succeeded in creating strong bonds between the technology and business teams and helped significantly improve IT's image across the organization.

Quite the challenge, but that's not all. He also managed to decrease overall IT spend by 10% while increasing capability and flexibility—and got the staff turnover rate to a low single digit percentage.

Here are the five strategies Kyne used to turn his IT department around:

1) DON'T BE AFRAID TO SLOW DOWN AND GAIN CLARITY.

One of the first things Kyne did in his new role at FBD was to slow down the lift and shift project and rework priorities. "I said, let's just calm everything down and get clarity on what needs to be done so we can pick the right solutions and technologies. We needed to work with business stakeholders and fellow leaders to map out our strategy as a business, then find the technology to drive that."

The original priority for the project had been simply to get it done as quickly and cleanly as possible. But Kyne and other company leaders recognized they had a unique opportunity at this point in the process to redesign and redevelop their core insurance products to future-proof them and make them more flexible for the business.

Because IT had been driving the new platform development, the old plan was very focused on engineering. "It also created quite a strong future dependency on the IT team to be able to do rate changes and rule changes in the future," he says. Kyne directed his team to make the system more configurable and easier for business users to implement changes on the same day without significant engineering input.

Kyne instituted more fact-finding sessions to make sure IT was clear on the requirements for each part of the system. They asked business stakeholders more questions: What does success look like? What would you do differently? How would that affect the business? How does it change the way we work with our customers, colleagues, suppliers or regulators?

"If we didn't have 85% or 90% clarity on those requirements, I wouldn't let a project go ahead," he says.

For IT to be successful, Kyne believes, it's not so much about the engineering. It's about the impact it makes. "The most successful IT is invisible," he says. "Our job is to deliver the best possible solution we can that enables them to execute on their tactics and strategy really quickly, but without a dependency on us. If our business colleagues can't be successful, we're not going to be successful."

2) BUILD PARTNERSHIPS WITHIN YOUR ORGANIZATION.

A project slowdown could be a risky move for a new CTOO, but Kyne succeeded because leadership was on board from the beginning. In fact, they'd brought Kyne in to the company to effect change. "They were willing to take that journey with me and put trust in that as well." Their support helped smooth the way for IT to take the time it needed to make the right changes.

Kyne also built positive relationships with the business units by creating change teams for each department, made up of IT staff and a department representative. Together, they would hammer out the requirement details. "So underwriting, for instance, or marketing now had someone on the team who represented their interests and articulated their requests," he says. "But they also gained understanding of how we work and how projects work, so it was easier for them to fill in the blanks."

The change teams created a more honest, down-to-earth environment where people could share information and ask questions. "We started to get more staff moving between business functions and IT so that everything was more open," Kyne says.

He now has business colleagues working on his test teams. Not only does that create relationships and understanding between IT and other departments, it has also opened channels of communication. "I've got trusted colleagues now in business teams who I know will call it honestly," Kyne says."And that's really important."

For Kyne, building trust of the business units is critical. "I must have scores on the board," he says. "It's a sporting term that means the only way you really build trust is to deliver. And you deliver as right as you can the first time."

3) MAKE COLLABORATION SIMPLE.

Soon after his arrival at the company, Kyne began inviting his senior managers to business stakeholder meetings. "Instead of me just being in a meeting, talking about priorities, my senior managers are the ones doing the interacting. This does two things. One, it says to the business units that IT is a team. As an individual, I can only do so much. The team is how we do things. Two, it gets my managers more committed to the projects."

It also provides his IT colleagues with opportunities to develop their careers and have more impact in their jobs. It helps the business units get acquainted with more people from the IT department and helps them realize they're real people who are trying to get work done like everyone else. The change improved IT's brand significantly and changed how non-IT colleagues interacted with the team. "It became a lot less fraught, a lot less formal, and an awful lot about doing things together," says Kyne.

Other changes enhanced collaboration between IT team members. Gone were the high dividers between desks, so now the space was more open and coworkers weren't siloed in cubicles. He created a specific behavior about going to talk to people face to face—including non-IT colleagues—whenever possible, instead of sending emails.

4) EMPOWER TEAM MEMBERS TO FIND SOLUTIONS.

While Kyne and his team were developing applications and reworking systems to improve outcomes, they sometimes ran into knowledge gaps. Instead of hiring a consulting firm to provide the information, Kyne rebalanced IT's training budget and sent staff members themselves to various conferences. This gave IT staff opportunities to see a lot of different solutions in action.

Kyne would then encourage them to talk to people at the conferences and learn more. He has a saying: "beer before, not beer afterward"—meaning that IT should go out with vendors and other user representatives before a sale, talk to them, ask questions, find out what the challenges are. Get the right information about a solution up front instead of rushing through a sale and then only going out to socialize afterwards.

"Our colleagues are coming back much more knowledgeable about what can be done and also with quite a different attitude and energy about actually trying these things out," Kyne says.

"Try and learn" is Kyne's philosophy when it comes to empowering his team. Trying and failing is okay; it's still a learning opportunity. Asking questions is also important.

"What assumptions have we or our business colleagues made about why something might work or not work with our customers or products?" Kyne says. "And then we validate or invalidate those assumptions quickly."

Kyne began setting up hackathons every quarter for IT, to give them opportunities to exercise their creativity and work on projects just for fun. The events were so successful that many colleagues from the business units also participate these days.

"It might not seem like a huge deal," Kyne says, "but it's been really transformative in how people think. And the energy and our staff retention is excellent."

5) INSTILL A SENSE OF JOB SATISFACTION.

Dublin is a huge tech market, and most big corporate IT companies have a center there. Competition for the best engineers, project managers, and business analysts is fierce. Kyne says FBD Insurance's pay scale is at median for the market, so he attracts new employees by emphasizing the impact their work can have.

"I say, we have an opportunity here to decide our futures because we're building new technology the way we want it," says Kyne. "It's in a complex, regulated environment in a really vibrant market in terms of general insurance. And because we've changed the way we work, we can see the impacts of that very quickly."

More than giving employees the ability to write on their CV that they are a great Java developer or a really good DBA, Kyne believes it's more valuable to give them opportunities to talk about what problems they've solved, what story they are creating for themselves. "Say that you saw a significant problem internally with our software. You found a new way of working and engineering what we did. You enabled customer delight and saw customer satisfaction ratings soar because of the work you did. That's a much better manifestation of your work."

Kyne wants to hire people for a career, not simply for a project. He's instituted various "quality of life" changes in the department that make it nicer to be at work every day. The dress code is now casual, changed from mandatory suits when he arrived. Employees have flexible start and end times and can also work from home. Sports and social committees allow people to socialize outside of work and build relationships that serve them well in the office.

Another benefit to sending his people to conferences, Kyne says, is that they talk to people who work at other companies and get a feel for other working environments. "They find out that they have the same concerns our crew might have here about doing things, but also that we are actually quite leading edge and that we have as much fun, if not more fun. A lot of our folks say they have a much better work-life balance here than people who work for some of the major brands."

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BUSINESS

OPENING UP ABOUT THE CLOUD

A Q&A with Open Source champion and enterprise cloud pioneer, Brian Stevens

Prior to joining the Nutanix Board of Directors in June 2019, Brian Stevens was the CTO of Google Cloud where he helped the technology juggernaut tailor its public cloud services to the needs of enterprise customers. Before that, he spent 12 years at Red Hat, where he evangelized the then-revolutionary idea of Open Source in the corporate datacenter.

NEXT Magazine recently caught up with Brian to learn more about his journey, where he acquired his "open" point of view, and to share his thoughts on the current and future state of cloud technology.

NEXT: You began your career as a software developer. How did you get started in tech and what were those early days like?

Brian: I grew up at a time when computer technology was just starting to be accessible to high school students. So, while I thought programming was a lot of fun, I had no idea you could build a career on it. Fortunately for me, I had a wonderful guidance counselor that said I could, so I switched gears from wanting to be a carpenter to wanting to be a software developer.

Back then, technology wasn't as open and readily accessible as it is today. To gain access to technology, you had to work for one of the big tech companies. I was lucky to get a job at the Digital Equipment Corporation (DEC), so I suddenly found myself in this great environment where I had all of this technology to learn from and experiment with right at my fingertips.

NEXT: Open Source played a pivotal role in your career. When were you introduced to the Linux environment and what part did you play in its further adoption?

Brian: I left Digital to join Red Hat in 2001. I think I was chasing disruption. As a technologist, I've felt the need to be connected to the outcome—the software I was working on had to have a massive impact on the user. Red Hat provided that opportunity. They built this great trusted brand that developers loved, but they weren't being used in enterprises. Back then, it was the IBMs, HPs and Sun Microsystems of the world inside the corporate datacenter.

My focus was always on enterprise customers, and it was pretty evident to me that there was an opportunity to revolutionize enterprise computing if it were more

open. You could see this consumerization of technology happening at the desktop with Intel, but the R&D cycle of investment ultimately created service at great cost. So, the disruptive opportunity was to deliver great value to customers by bringing "untrusted" Open Source Linux on Intel into the enterprise infrastructure. We built a team to develop an enterprise version of Linux and launched the industry's first software subscription service to create a tighter relationship with our customers.

NEXT: When were you first introduced to cloud computing?

Brian: One of our biggest customers at Red Hat was Amazon. We helped them build the first instance of what became Amazon Web Services (AWS) in 2006. When I saw it launch, it was such an epiphany for me. Just when you think that Open Source and Intel in the enterprise is the end state, you suddenly realize that this public cloud infrastructure-as-a-service is just another step in that same journey. This is the future. It will make the world so much better for developers in IT. When Google approached me in 2014 to run product for Google Cloud, I was really excited to get directly involved shaping the future of cloud.
Google was doing a great job focusing on their current users, which were all the startups and native-cloud companies, but they weren't focused on incumbent enterprises. So, just as with Red Hat, while Google had many innovative technologies, they were missing key areas needed for enterprise integration and adoption. And of course, with enterprise, there's a lot more to it than just technology. Of course, we had to focus on security and integration and such, but there were also business concerns to address: privacy agreements, service level agreements (SLAs), what processors you use to operate the cloud. As much as it was building the technology, it was very much about building the business and the controls such that enterprises would be comfortable with our service.

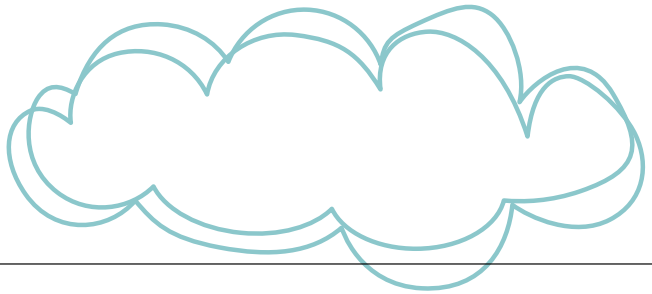
NEXT: What's your cloud prediction for 2020 and beyond?

Brian: The industry has been through a world of consolidation. Now, we just talk about the big three (AWS, Microsoft Azure, Google Cloud). The organizations behind each of these companies are huge—tens of thousands of software engineers. Every day, there's more code being written, and more complexity as each company strives to deliver a more capable cloud. But as each cloud becomes more advanced and feature-rich, they also become more disparate, more isolate, proprietary, and harder to use. Just like the datacenter incumbents a decade earlier, the big three cloud providers had been fighting open standards and commoditization. But you're starting to see Open Source influence cloud services and architectures. Kubernetes and Docker and API gateways, all of those primitives that are really valuable to end-users are starting to be adopted in common across all the public clouds. I think that's a great thing. We're now just starting to see more cloud portability at the application level between clouds. While that sounds like a small thing, it'll have a huge outcome for many years to come.

Looking out over the next five years, you'll see cloud providers not only federating artificial intelligence (AI) capabilities to their customers but using it themselves. You'll begin to see clouds that are better at predicting and making decisions and offloading that from IT and developers. All that work IT has to do around resiliency or availability, scaling up or scaling down—you're going to see the clouds using AI to automate every aspect, from security to availability and resilience. All of those outages that took out whole regions will also become a thing of the past. With AI's ability to monitor vast amounts of data and predict outcomes, the public cloud will be more like dial-tone service with regard to uptime and reliability.

NEXT: You've called hybrid cloud "a game-changer" for the enterprise. Why's that?

Brian: Enterprises are much more comfortable using public clouds, but they're still going to want to run applications on-premises. So, the ideal state for them is to be able to use technology in their datacenters, technology in their branch office, and technology in multiple clouds—with no restrictions. Unfortunately, you have this world where the public cloud providers are only focused on their own public deployments and the on-premise providers are focused on their side. When you look at an enterprise customer trying to use both, it's incredibly difficult and costly in people, developer and IT skills, because the environments are so dis-similar. The companies that can make this super simple with a great user experience—make it easy for developers and IT to deploy and manage applications on-premise and publicly,



without a degradation in capabilities—are going to provide a tremendous amount of value for enterprises.

NEXT: In the meantime, what advice would you give enterprises dealing with these challenges?

Brian: I would tell them to build a software factory. I see too many companies that go all-in on one set of technology stacks and then they get left behind as a new capability comes about somewhere else. If you continue to thickly provision and develop for a specific platform, it becomes way more difficult to adopt new platforms, operating systems, or new environments. It's very costly.

In a software factory, you think about how you can isolate the code from the deployment environment. If you have a release engineering sort of pipeline for everything that the CIO office and the lines of business do, and they all use standardized software factories for production, you can now leverage a set of similar processes that allow you to take advantage of disparate deployment environments at the backend.

NEXT: It's always been a challenge to find and keep good IT talent. What do you look for in an individual and what's your advice for nurturing high-performing teams?

Brian: The IT environment is constantly changing. You don't just hand someone a spec and say, "go build this thing." So, when looking at talent, it's really around what I call aptitude and velocity. Does a young software developer have the aptitude and are they curious and self-motivated to learn new things? You're looking for people that understand the choices and are brave enough to go out there and figure out the answers. To me, it is less about the university someone went to and more around the individual's intellectual curiosity. Do they like to explore, play, learn, and break things? That's what you want.

As far as team building, the reality is your team members are not necessarily going to be in Mountain View or Boston or London anymore. Cloud and Open Source have federated technology so that far more people have access and can go out and play with different frameworks and things. You have to build a model that enables people to collaborate wherever they are if you want to scale your business. And you need to pick team players. When I'm interviewing individuals, I always ask, "Tell me about the last team-based project you worked on. What did you do? What did they do? Did you ever shift roles? What did you do to help them, and vice versa?" You get far more interesting conversations when you start with this approach.

Most importantly, you want a team that is outcome-oriented instead of being task-driven without any sense of what success looks like. When they know how to measure success, a lot of things fall away because they're not necessary to the mission. It's liberating for the entire team. It enables them to focus and reassess daily whether they're pointing in the right direction.

NEXT: Thanks so much for your time, Brian. Before we sign off, could you tell us which cloud applications excite you the most?

Brian: What excites me is the continued federation of technology to deliver access and services to people and environments previously cut off or underserved. When you combine cloud services with AI and all of these APIs to connect things and devices, the possibilities are endless. There are thousands of examples of tech doing good but one of my favorites is a diabetic retinopathy test developed by Google. Diabetics can go blind when this condition goes undetected. This doesn't happen often to people sitting here in Silicon Valley or anywhere else with easy access to doctors. Now, anyone in the world can snap a picture of their eye with a mobile phone and upload it to the cloud where an AI algorithm will analyze their risk of blindness. Before, you had to have labs, doctors, and be physically present in certain regions. Now, the hundreds of millions of dollars that went into developing AI capabilities for some other reason are being deployed to benefit people thousands of miles away from Silicon Valley. That's exciting.

> Just when you think that Open Source and Intel in the enterprise is the end state, you suddenly realize that this public cloud infrastructure-as-a-service is just another step in that same journey. This is the future.

VIVE LA DIFFÉRENCE!

Understanding and navigating diverse cultural orientations and styles in global workforces

Erin Meyer has a Darwinian message for business leaders and managers with global workforces: Adapt to cultural differences or suffer unintended consequences. A professor at Institut Européen d'Administration des Affaires (INSEAD), an international business school based in Paris, Meyer specializes in an important but all too often overlooked facet of the melting pot of globalization—the often daunting, often subconscious, evolving world of business culture.

Cultural differences are real. They can positively or negatively impact the experience of employees, customers, partners, and suppliers. How do the world's most successful managers navigate the complexities of cultural differences? Through Meyer's research, teaching, her book *The Culture Map: Breaking Through the Invisible Boundaries of Global Business*, articles in leading business publications, and corporate seminars, she offers real-world insights and practical strategies.

Uncovering and Addressing Cross-Cultural Friction

Consider the Chinese manager hired by a company in Germany who goes to attend her first meeting in Berlin. She had prepared to deliver a briefing, but during the meeting, she doesn't utter a single word. There was never a pause in the conversation; it seemed to her that everyone was speaking at once, including senior managers, and she felt uncomfortable and too junior to compete with them for attention. As she left the conference room, she heard a German colleague tell a fellow employee that it seemed as if "She had no ideas to add to the discussion."

Or take a French man who was transferred from Paris to a position in Chicago. Four months into the job, he was elated; he loved his new role and thought he'd had a fantastic performance review. But the man's American boss had a completely different impression. He thought that things were not going well; that he had been clear about his expectations and didn't think the Frenchman was making an effort to meet them.

"I am continually amazed that so many companies that interact globally spend so little time thinking about different cultural styles and orientations," says Meyer. "Maybe it's because our fear of stereotyping has just paralyzed the conversation."

While behavior among individuals and within regions does vary, Meyer and her fellow researchers have demonstrated that different cultural styles do correspond to different nationalities. According to Meyer, Americans typically respond better when negative feedback is preceded by a manager talking about what the employee has done well. This differs from Taiwan, where managers are taught never to criticize a colleague openly. Contrast that with the Netherlands and Russia, where managers are expected to always be honest and blunt.

From Monoculture to Multiculture

Raised in a rural community in Minnesota whose residents trace their lineage back multiple generations, Meyer moved to Africa with the Peace Corps after university to teach English in Botswana. She was immediately faced with a challenge based on her first encounter with a far different set of cultural norms. Whereas college students in the U.S. are used to being given a certain amount of freedom in the classroom (e.g., lack of daily roll call or the freedom to choose assignment topics or unassigned seating), in Africa students prefer a more rigid, hierarchical structure, with teachers expected to be explicit and formal. Meyer had to adjust her teaching style to be effective.

Returning to the U.S., she brought her new multi-cultural perspective to work with Asian immigrants and then in a job at McKesson. Eventually settling in France, Meyer opened a cross-cultural business consulting firm and then became a professor at INSEAD where she has since taught thousands of executives from five continents to decode cross-cultural complexities impacting their success and to work more effectively across those differences.

Mapping Business Culture Around the World

Meyer believes that cultural differences should be celebrated, not seen as obstacles. Her Culture Map framework and Country Map tool allow executives and employees to pinpoint their business styles and—much like a global, cultural barometer—to compare them to maps from other countries.

The Culture Map focuses on eight separate behavioral scales: communicating, evaluating, leading, deciding, trusting, disagreeing, scheduling, and persuading. The

behavioral scale for communicating, for example, features a continuum from "low-context" communication (precise, simple, and given at face value) to "high-context" communication (which is more subtle, spoken and read between the lines, implied but sometimes not clearly expressed, possible in a monocultural environment). Today, with people of different cultures working together, often virtually, high-context communication is out. Communication must be written and its meaning clear across regions and audiences.

Another behavior scale, leading, plots individuals along a continuum between their expectation of hierarchical (deferring to authority, respecting hierarchy) versus egalitarian (more open, less hierarchical) management cultures.

How do cultural differences arise? For most people they begin in school, says Meyer. For example, many Americans of the Millennial generation received lots of praise as youngsters. School systems focused on building self-confidence. Trophies in youth sports were often awarded for participation rather than winning a game. This generation of young people have entered the workforce with greater sensitivity to negative feedback. They expect to be mentored instead of criticized.

"Young people around the world in general are becoming more egalitarian," Meyer believes. "Before this generation, you couldn't find information without going through experienced people. Now you can find what you need on your phone. The Internet has contributed to the breakdown of hierarchy in many business cultures."

Tapping the Benefits of Diverse Cultures

Meyer has brought her appeal for better cross-cultural understanding in business to the World Bank, the United Nations, and to some of the largest global companies. Netflix used the Culture Map to understand its corporate culture in preparation for a major expansion to 130 countries in one day in 2016.

"A big part of the very American Netflix management culture includes delivering candid feedback to employees," Meyer recalls. "To prepare for recruitment efforts in other parts of the world, they needed to see how their culture compared abroad." This knowledge was used to better understand how to describe roles, conduct interviews, set expectations for new hires, and manage employees in other countries.

Meyer sees cultural differences as rich resources that can be tapped to generate new ideas and perspectives to address problems and spur creativity and innovation. But multi-cultural understanding can be a complex and challenging undertaking. Individuals, different generations, and companies in the same country can all have different cultural orientations and expectations in the workplace. What skills are required to manage the global cultural melting pot?

"Humility, curiosity, listening before we speak, and learning before we teach," Meyer tells her audiences. "Put yourself in other people's shoes. Recognize that where we come from influences our behavior. Understand that the better we understand cultural differences and appreciate the benefits and differences of how we learn and communicate in different parts of the world, the more we can be effective in leading and communicating in multicultural environments."

The Country Map tool is based on a 25-question assessment that lets you generate your own Culture Map across the eight dimensions of business culture. You can then see how your map compares and contrasts with the Culture Maps of your country and other countries. Based on over 180,000 interviews conducted in 57 different countries over nearly two decades, the Country Map tool can also drill down to show changes in culture within each country and within different generations in each country over time.

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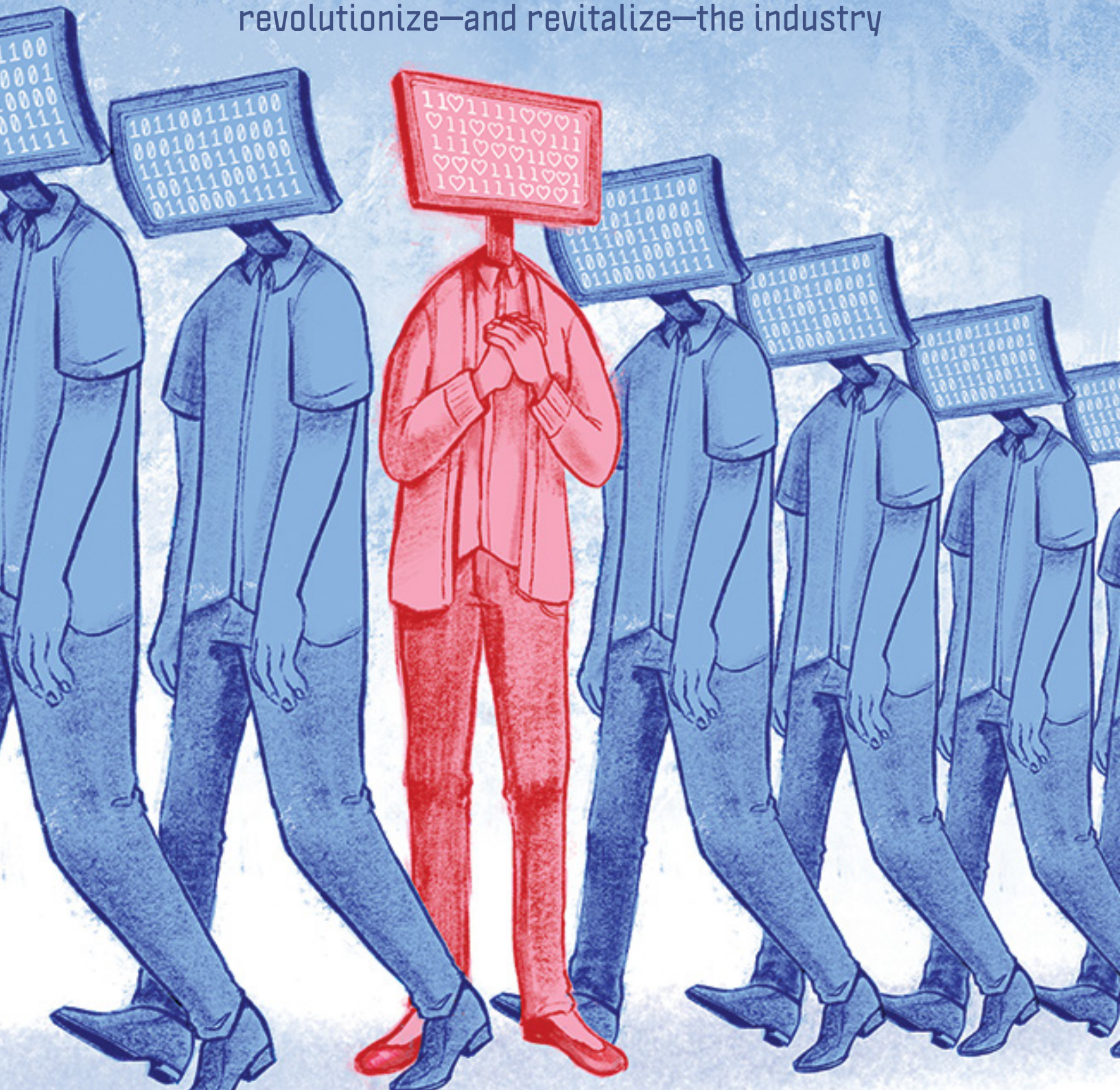
TECH/TRENDS

CODERS WITH HEART CAN CHANGE THE WORLD

Discovering the softer side of software coding can revolutionize—and revitalize—the industry



Being a software engineer or programmer isn't easy. Burnout is rampant, turnover is sky-high, work-life balance is nonexistent. It can be cutthroat and fiercely competitive, where everyone is sure they're the smartest person in the room, and even asking a question to clarify an issue can be seen as a weakness. And the weak don't survive for long.

April Wensel wants to help change all of that. She's the founder of Compassionate Coding, an organization that cultivates human-centered software development practices by strengthening people's emotional intelligence.

"Compassionate Coding is software development with a heart. It's a new approach that focuses on minimizing suffering for people in and around technology," says Wensel. She wants to alleviate the suffering of software engineers themselves by helping to change ingrained industry practices, but it doesn't stop there. The results of teaching emotional intelligence and compassion can be revolutionary for coders, nontechnical colleagues, end users, and even the world at large.

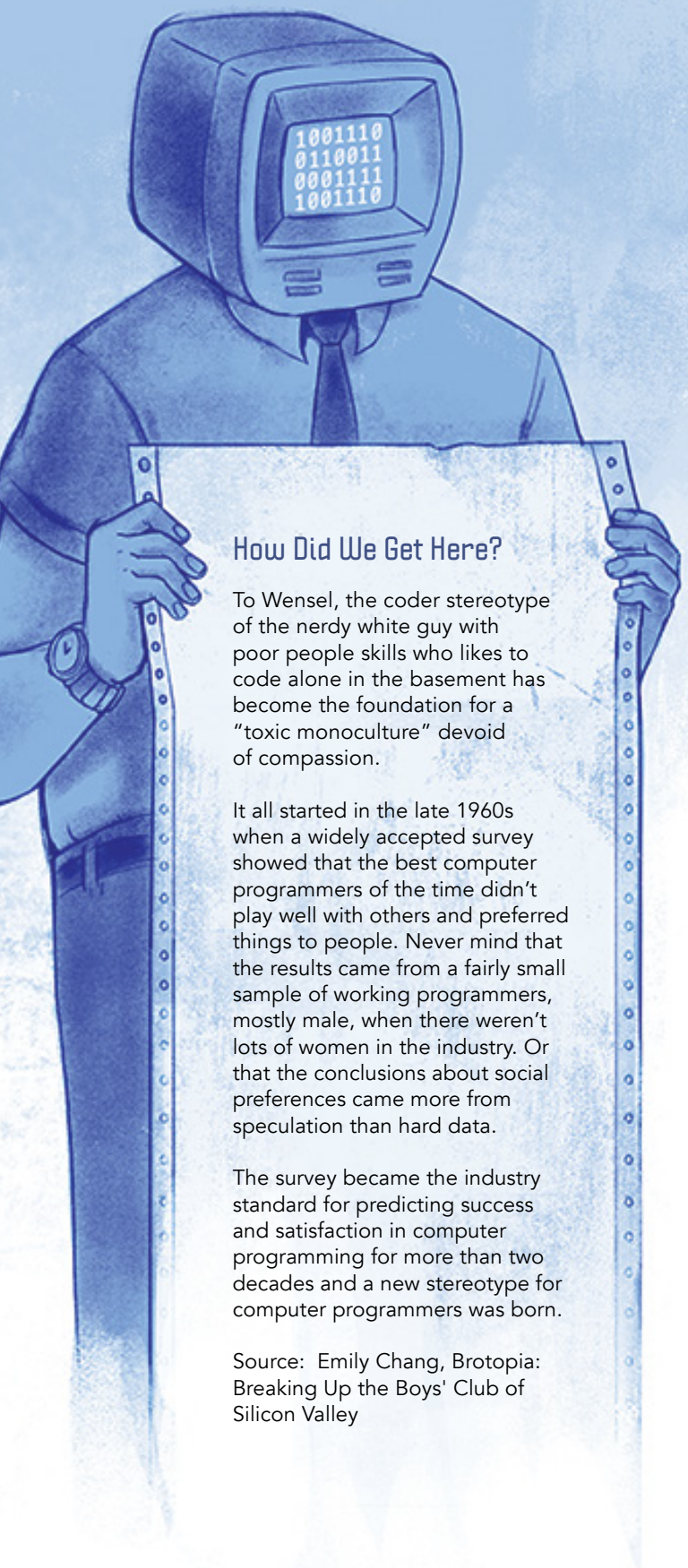
> "We need to … realize that coding skills are not more important than the emotional intelligence skills, the empathy, and compassion that actually help us create good code. We need both."

Been There, Done That

After ten years of working as a software programmer in various Silicon Valley companies, Wensel saw pain and suffering at many different levels. Not only the extreme pressure and subsequent burnout individually, but also a lot of unhealthy conflict among team members. Serious lack of diversity. No respect among coders for nontechnical coworkers. An elitist attitude among programmers that discourages collaboration.

"I used to exhibit a lot of the negative behaviors that I'm trying to change in engineers, because I thought I had to have that sort of arrogance to keep proving how smart I was," Wensel says. "I didn't like the person I had become in order to succeed in technology and fit in with this 'brogrammer' culture."

Suffering also applies to people who have poor user experiences. Some technology companies add to the troubles by building unethical products that are addictive



How Did We Get Here?

To Wensel, the coder stereotype of the nerdy white guy with poor people skills who likes to code alone in the basement has become the foundation for a "toxic monoculture" devoid of compassion.

It all started in the late 1960s when a widely accepted survey showed that the best computer programmers of the time didn't play well with others and preferred things to people. Never mind that the results came from a fairly small sample of working programmers, mostly male, when there weren't lots of women in the industry. Or that the conclusions about social preferences came more from speculation than hard data.

The survey became the industry standard for predicting success and satisfaction in computer programming for more than two decades and a new stereotype for computer programmers was born.

Source: Emily Chang, Brotopia: Breaking Up the Boys' Club of Silicon Valley

or that prey on people's psychological vulnerabilities. And finally, even at the global level, technology affects people who might not even use it, by displacing jobs or giving platforms to groups that want to harass others.

"I saw that all of these issues had a common thread," says Wensel, "which was that we've been building technology without really caring enough about the people who are being affected and involved in the technology."

How It Works

Through workshops, keynote presentations, and online learning, Wensel trains software engineering teams in the emotional intelligence skills that breed productivity, conflict resolution, inclusion, and retention.

The main skill she focuses on is compassion, which she defines as empathy plus action. "Empathy is about understanding that other people are suffering," she says, "but compassion adds another layer, which is wanting to take action to alleviate that suffering."

"I think we all have compassion within us," Wensel says. "A lot of us have had to push it down to succeed in a very cold kind of business and technology world."

Rebooting a person's compassion takes introspection, which can seem impossible in a programming environment. "We have very aggressive deadlines and that is not a human pace where you can have empathy for people," she says.

By talking about how people are feeling and giving them space to sit and think about concepts that don't normally enter their workday, Wensel helps teams build awareness and opens them up to the value of considering other people in everything they do. They discuss conflicts from the coders' pasts and break the incidents down to talk about how everyone could have approached it differently.

"In computer science, there's no training in emotional intelligence or ethics," Wensel says. "And it's not just that they don't teach it; it can actually be looked down on because it's not considered as important as these hard technical skills."

The problem with pursuing only those hard technical skills—even if that's what a software engineer prefers—is that no matter how great the code is, no matter how fast it gets done, Wensel explains, if it doesn't take into account the human component, it's not the best code. If it's not maintainable, people in the future can't use it. If it's not what the user wants, it's not as effective as it could be.

"We need to expand this very narrow stereotype we've been living with since the 1960s of what makes a good software engineer and realize that coding skills are not more important than the emotional intelligence skills, the empathy, and compassion that actually help us create good code," she says. "We need both."

A Better Way for a Better (Coding) World

Today, there are many consultants with thriving businesses teaching emotional intelligence and human-centeredness to corporations—that's not a new concept. Wensel's organization is unique because it focuses on coders, a group that is rarely targeted for this type of education. It's also a group with a stereotype of socially awkward, unemotional individuals whose idiosyncrasies have long been overlooked or indulged because of their critical role within the company.

Compassionate Coding teaches general concepts of compassion and emotional intelligence, but then Wensel puts those ideas into a programming context to show coders that there are different ways to work and be successful. She gives them practical, real-life ways to be compassionate in their day-to-day workflow.

"It helps that I'm an engineer, so I can speak the language and empathize with the issues," she says. "It does help me now. In my ideal future, however, that wouldn't have to be the case because [the coders] would see that they can get valuable input from people from all disciplines."

Once learned and put into practice, compassion in coding can permeate throughout an organization to improve its products, streamline processes, strengthen partnerships, encourage collaboration, and break down silos.

"Compassion can be a factor that affects any decision you make on a daily basis," says Wensel. "That goes down to even the code level."

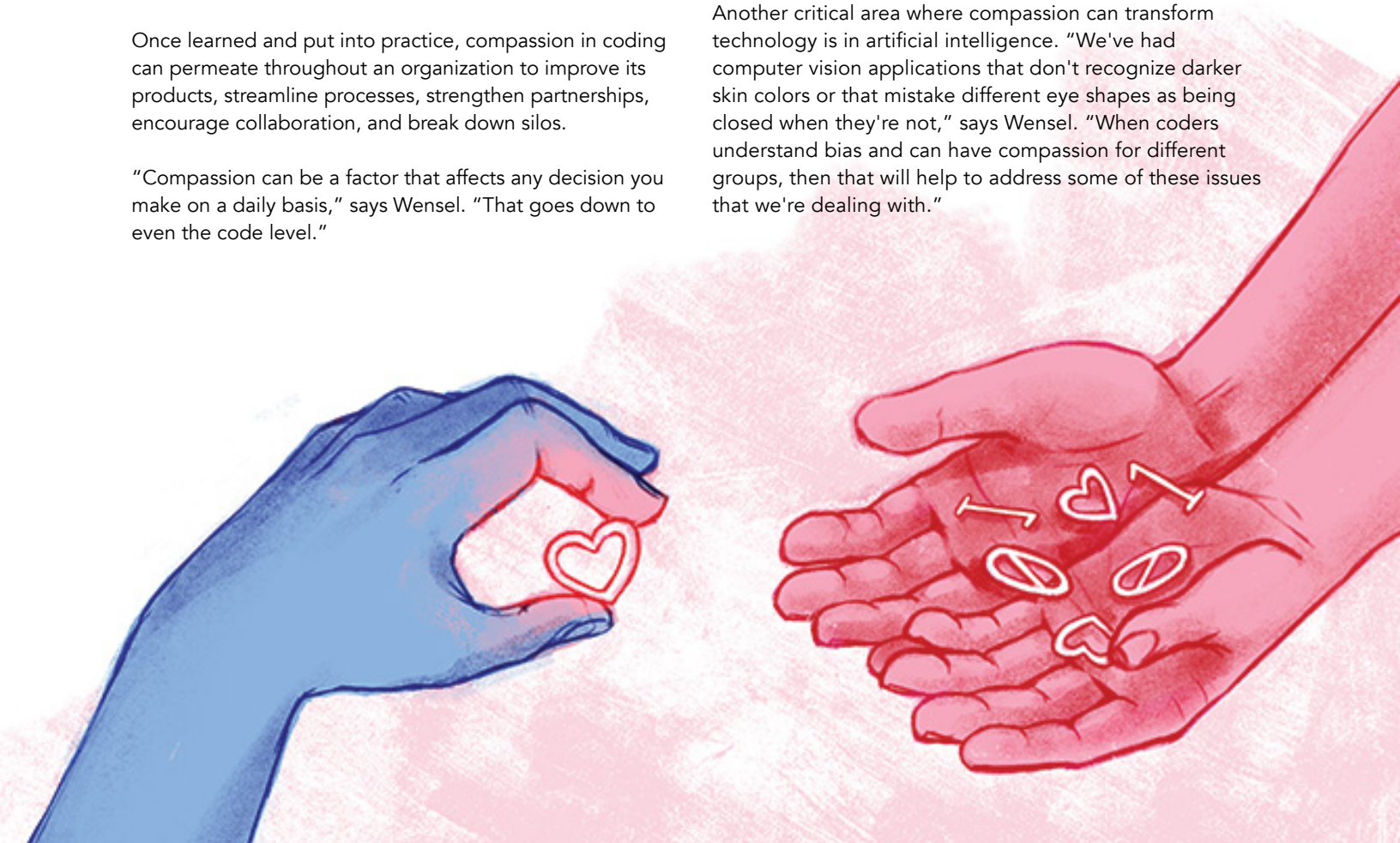
She explains that coders can show compassion even in what they name their variables in software code. Instead of just naming them x, y, and z, a coder could name them more descriptively so others will know what they are when they look at the code. "Just think about what humans will be reading your code in the future. The machine doesn't care what you call the variables, but humans do."

It's a matter of thinking beyond what's merely the most efficient or easy way to do something in the moment, and taking other people into account. Coders can think about how to architect a whole system to be more compassionate to future coders as well as users. They can exercise compassion in code reviews, which is similar to a peer review of an article and can become extremely contentious. They can give empathetic feedback and receive others' input with grace.

Compassion can change meetings with designers into valuable information sessions where both parties work to understand each other's point of view. It can also provoke a coder to leave a company that is using data unethically or creating addictive products.

It can help improve the user experience even if a desired feature is tough to build or takes longer to create. Compassion can help in prioritizing the features and capabilities that end users want, not solely what the coder thinks is most important.

Another critical area where compassion can transform technology is in artificial intelligence. "We've had computer vision applications that don't recognize darker skin colors or that mistake different eye shapes as being closed when they're not," says Wensel. "When coders understand bias and can have compassion for different groups, then that will help to address some of these issues that we're dealing with."



> Compassion has the power to heal the tech industry. Software may be built on machines, but it's built by, with, and for human beings.

Times Are Changing—But It's Slow Going

Wensel has had great success with the corporations and individuals that have requested her services, but like every intrepid trailblazer, she gets her share of trolls and naysayers.

"Some of the earliest feedback I got when I created my company was that the name was girly," laughs Wensel. "It was so illustrative of the problem, which is that technology is seen as masculine and compassion is seen as feminine and it's a negative to be girly. You can tell just by the word choice that there's an immaturity there and that is part of what I'm trying to address."

Wensel has also gotten resistance from "middle managers at some of the bigger tech companies who embody a lot of the most toxic traits in terms of ego. They want to deny that there are any problems in technology and so sometimes they'll push back and say, 'What are you talking about? Everything's fine.'" But Wensel has compassion even for them, she says, "because that sort of aggressive behavior comes from fear. Fear that he's going to become irrelevant in this new phase where humans matter."

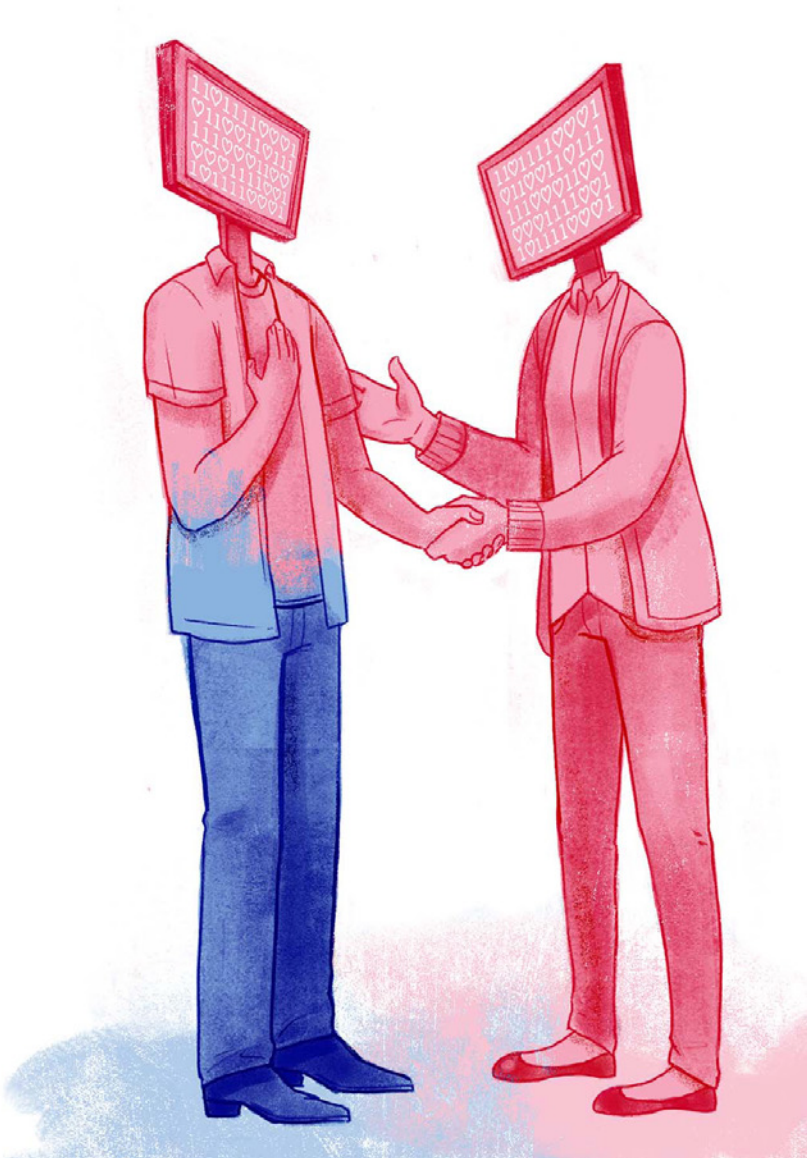
Despite this type of minor resistance, however, Wensel has seen the beginning of a shift in the industry toward a new way of working. "There's a hunger for this because people realize that when you're caught up on this treadmill and you keep going and going, that's not the best approach in the long term," she says. "Companies recognize there is a problem and it's about solving the problem now."

Awareness is great, but it's just a first step toward a solution. Wensel says she's happy to see more empowerment among underrepresented groups in software programming, and that building awareness about the human factor in technology is critical to making big changes. "We still need some deep cultural changes, though," she says. "They're still affecting us and how we interview people, how we recruit people, how we promote people—even how we teach in schools."

She says the tipping point likely won't come from changes within today's big, established technology companies—although any movement they make toward more compassionate practices is valuable. Wensel sees the real solution as software businesses created by women and other underrepresented groups. Businesses that don't have the brogrammer legacy, that can start with new values and more human-centered approaches to coding.

In the meantime, Wensel continues in her quest to relieve suffering. "For me, the value comes from helping individuals," she says. "What's most rewarding is when somebody says, 'I've never thought about it this way. This is really going to help me.'"

Wensel believes in compassion and its ability to drive change. On her website, she says, "Compassion has the power to heal the tech industry. Software may be built on machines, but it's built by, with, and for human beings. It's time to start focusing on the human factors of software development, including the importance of cultivating compassion."

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DRONES

doing good

All around the world, drones
are being used for breakthrough
social and economic good.

Drones generally get a bad rap. For years, these unmanned aerial vehicles, or UAVs, have been making global headlines as instruments for executing swift, hard-to-anticipate military strikes. Surveillance drones used by law enforcement have also opened a Pandora's box of privacy and security issues, along with a side industry for makers of drone countermeasure technology.

However, drone use is growing. Venture capital funding for the drone industry reached record levels in the first half of 2019, soaring to $350 million, according to the Teal Group. The research firm projects that the global consumer drone market will triple over the next decade, while the commercial drone segment grows sixfold to $9.5 billion in annual sales by 2028.

UAVs take all shapes and sizes to address a variety of airborne missions. And most of them have absolutely nothing to do with harming people or trampling on privacy rights. On the contrary, drones are increasingly being used to assist in humanitarian, conservation, and social efforts that save lives and protect the planet.

On the economic front, drones are also helping level the playing field for local businesses in rural areas.
Here are just a handful of examples of how drones are helping fight the good fight around the world.

Re-Seeding Forests Ravaged by Wildfires

Researchers predict that as climate change causes temperatures to rise, wildfires are likely to increase too. Intense wildfires can burn through inches of topsoil, torching tree seeds and making forest regrowth nearly impossible.

"Normally, fires go through and trees grow back. That's natural. But what we're seeing is about 40 percent of the time now, with climate change, that's not happening," says Grant Canary, CEO of DroneSeed.

Canary's company uses heavy-lift drone swarms to drop seed vessels over fire-ravaged areas. "We do exactly what nature would be doing, which is spreading the seeds out, getting more trees, and making the forests grow," he says.

The drones also capture aerial images of scorched land within a centimeter of accuracy. The images help the DroneSeed team pinpoint the most desirable areas to drop the seeds.

Moving six times faster than human planters with the capability to plant 20 million trees in six months, DroneSeed is the most cost-effective reforestation alternative available today, according to Canary.

Delivering Lifesaving Medical Supplies

Drones are helping deliver blood, vaccines, medical supplies, and even human organs to patients when fractions of time can be the difference between life or death.

In April 2019, for the first time ever, a drone was used to deliver a donated kidney for transplant. The custom-built drone, equipped to monitor the kidney during transit, sent updates to the transplant team awaiting delivery at the University of Maryland Medical Center in Baltimore.

Doctors often can't see an organ's progress in transit, says Dr. Joseph R. Scalea, head of the transplant team and assistant professor of surgery at the University of Maryland School of Medicine. But this drone provided timely updates, the way someone might track an approaching taxi on their phone, he notes.

"We can monitor in real time," says Scalea. "It's like Uber for organs."

The surgeons successfully transplanted the kidney in a Maryland woman who waited eight years for the lifesaving donation.

Although the Baltimore flight was less than three miles, the drone creators see it as a potential game changer in significantly speeding up time-sensitive organ delivery, especially in big cities congested by traffic.

The world's largest medical drone-delivery service, Zipline, whisks emergency blood packs to thousands of rural clinics in Rwanda and Ghana. A 31-mile trip through the hills of Rwanda can take more than an hour by car but less than 14 minutes by drone.

All Zipline's drones are autonomous and fly beyond visual lines of sight into the hardest-to-reach areas. The drones deliver more than one-fifth of the blood supply outside the Rwandan capital of Kigali, and Zipline's dependable drone service has led to a 175 percent increase in blood product usage and 95 percent decrease in waste.

Outsmarting Poachers in Africa

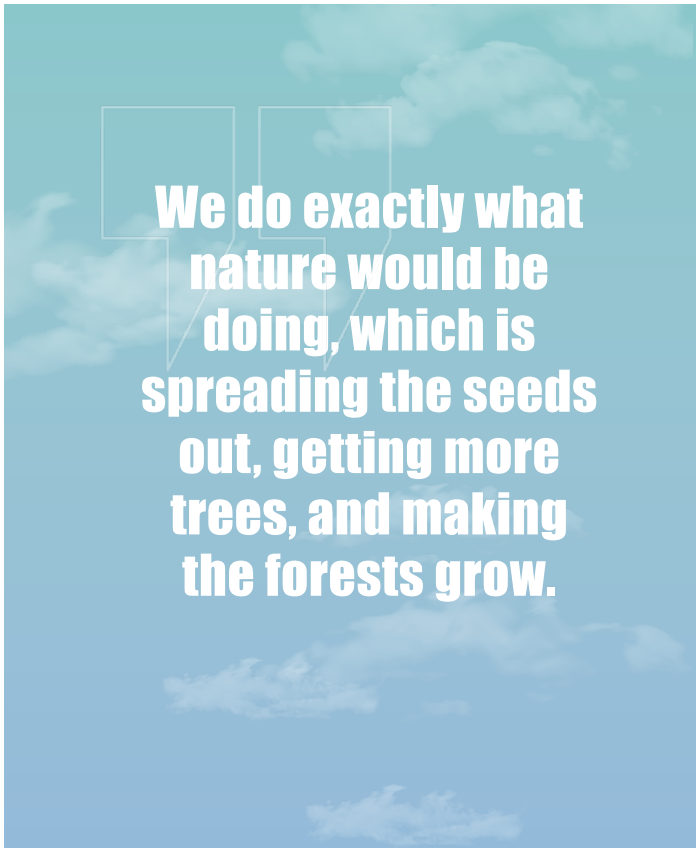
Anti-poaching drones are saving the lives of rhinos, tigers, elephants, and other endangered animals in Africa. Covering hundreds or thousands of acres in a short timeframe, the silent, mostly fixed-wing drones patrol reserves and beam live video back to park rangers. Pre-positioned in mobile command-and-control units, rangers can deploy quickly within a threatened area.

Using infrared sensors and thermal imaging technology, the drones can detect heat signatures of animals and humans at night when poachers like to strike. Drones can also be outfitted with strobes to illuminate poachers, magnetic sensors to detect weapons, and recorders to detect and determine the location of gunfire.

Anti-poaching drones also integrate predictive analytics to help rangers identify threat areas and organize drone flight plans. Among the collected data are poachers' known past behaviors, terrain characteristics, and wildlife movement patterns.

Improving Disaster Recovery Efforts

In the wake of hurricanes, floods, earthquakes, and other natural disasters, drones have a proven track record in helping organizations identify critical areas of need. They accurately can assess damage, locate victims, and deliver aid to people trapped in areas where it's difficult or dangerous for emergency responders to get to quickly. Aerial views captured by drones can also help guide emergency responders on the ground.



In November 2019, a squadron of unmanned drones were dispatched around Paradise, California, after the state's largest wildfire devastated the area. In just two days, 16 teams of emergency responder agencies conducted 518 drone flights to map 17,000 acres of affected land and survey the damage.

In the hours and days after the drone flights, the data collected was used to create maps that assisted in planning recovery efforts and gave victims of the fire their first glimpse into the condition of their homes and surrounding property.

In 2017, the FAA approved the use of drones to restore cell service in areas of Puerto Rico devastated by Hurricane Maria. Operating like flying cell towers, drones can help quickly restore voice, data, and Internet service after disasters when Wi-Fi and cell service could be down for weeks or months.

Leveling the Playing Field for Local Businesses

As Iceland's largest online marketplace, Aha provides white-label e-commerce services for local restaurants, retailers, and grocery services. In 2017, Aha partnered with Israeli-based Flytrex, creator of a cloud-based drone logistics system, to launch the world's first operational drone delivery service.

Today, many residents in Reykjavik, Iceland's capital, can choose to have their sandwiches, sushi, and other foods from their favorite local eateries transported by electric car. And in many cases, delivered right into their backyard via drone.

"We believe in strengthening local economies," says Aha CEO Maron Kristófersson. "We want to help businesses compete on a technical scale with the likes of Amazon, while maintaining the product and service expertise locally."

Like Grubhub in the U.S., Aha customers can select from the menus of a variety of local restaurants, placing their orders online or via a smartphone app. If customers live along one of the 13 main routes the drone is authorized to fly by the Icelandic Transportation Authority (ICETRA), customers can choose to have their food delivered by

drone. Aha's drone can deviate up to 700 meters, about half a mile, from the ICETRA-approved routes to make home deliveries. For customers whose homes are outside the permissible flight paths, the drone flies to a predesignated area where an Aha courier completes the delivery by car.

For drone home deliveries, Aha communicates with customers via the smartphone app. When customers are ready to receive their food, they simply press a button. The drone hovers 50 to 60 feet above the ground while the food is lowered by wire tethers into the yard.

In addition to the environmental edge drones have over cars, they're free from the topography that can make on-demand delivery challenging in Reykjavik. The city is subdivided by rivers and bends around a large bay, which effectively cuts Reykjavik in two and makes it nearly impossible for road-faring vehicles to avoid taking circuitous paths from point A to B. A delivery that might require driving 4 miles and take up to 20 minutes during peak-hour traffic spans about one mile and takes four minutes by air.

Boasting significant time savings, drones will eventually cut Aha's delivery costs by 60 percent compared to ground delivery.

Within five years, Kristófersson would like 50 percent of Aha's restaurant deliveries done by drones. However, the weather in Iceland is one of his biggest obstacles. Inclement weather prohibits drone deliveries for about 10 to 20 weeks out of the year.

Kristófersson is also mindful of not moving faster than the public's acceptance of drones as a method of transport. "Our general hungry customer wants food—at that stage he doesn't care about the delivery method. We therefore need to generate demand with early adopters to test the drone delivery—the early adopters don't care if they are getting a full meal or an apple but are thinking more about the tech."

With the experience he's gathering in Iceland, Kristófersson is confident that he can expand the Aha marketplace model and drone deliveries overseas, setting his sights on less densely populated areas like Reykjavik where local businesses and restaurants don't have the expertise or resources to compete on an e-commerce scale.

FASTER, HIGHER, STRONGER:

HOW TECHNOLOGY TRANSFORMED THE OLYMPICS

1900
PARIS, FRANCE

Chronophotography, a photographic technique that captures movement over several frames, is used to analyze the movement of athletes

1912
STOCKHOLM, SWEDEN

Electronic stopwatches are used, activated by starter's pistol in track events

1924
PARIS, FRANCE

The games are broadcast live on radio

1932
LOS ANGELES, CALIFORNIA

Omega's Kirby camera simultaneously photographs the event's finish line and imprints the time on each frame

1960
ROME, ITALY

Instant video replay is introduced

1964
TOKYO, JAPAN

Games are broadcast worldwide via satellite, the U.S.-owned Syncom 3

WHILE WE LIKELY HAVE TO WAIT UNTIL 2021 FOR THE TOKYO GAMES, WE FIGURED WE'D GIVE YOU YOUR OLYMPIC FIX WITH A LOOK AT THE TECH BREAKTHROUGHS THAT HAVE TRANSFORMED THE WAY WE EXPERIENCE THE WORLD'S MOST EPIC SPORTING EVENT.

1992
BARCELONA, SPAIN

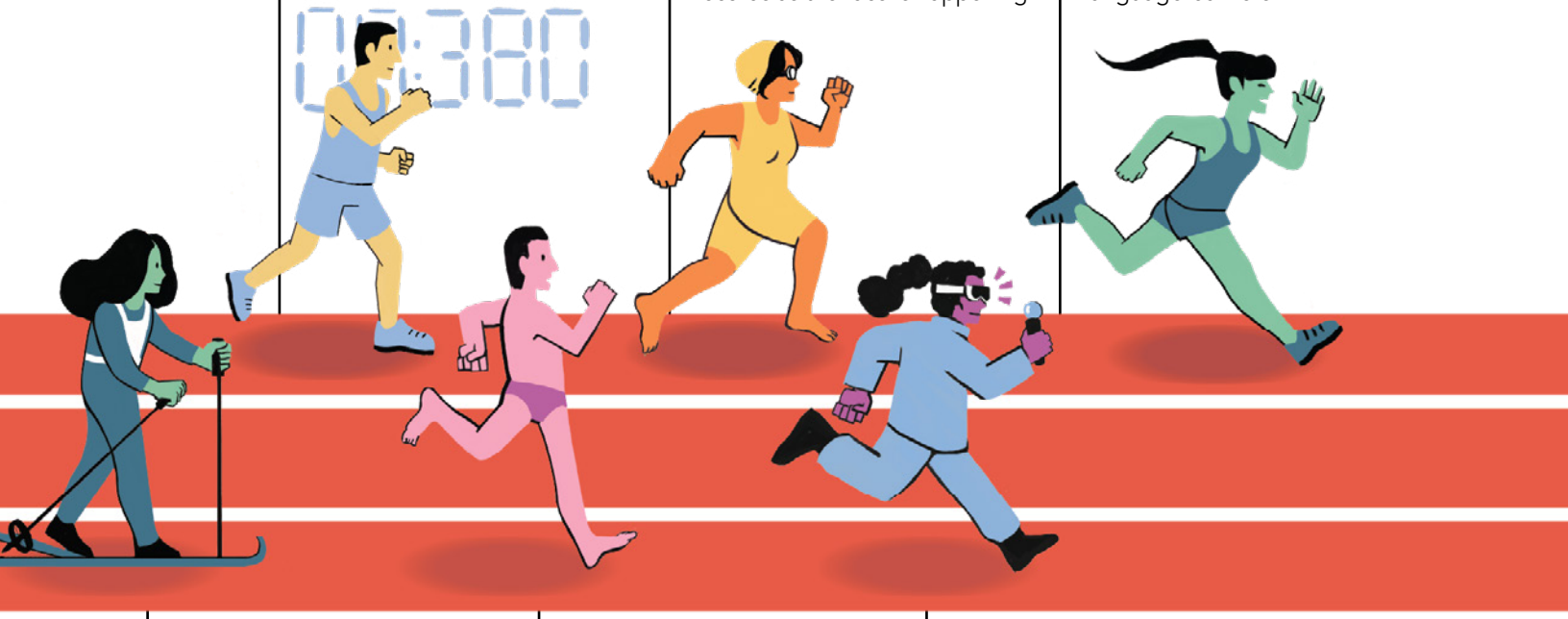
Omega's Scan-O-Vision photo-finish system digitally measures time to the nearest one-thousandth of a second

2000
SYDNEY, AUSTRALIA

Virtual imaging enables the "virtual world record line" in swimming events, allowing viewers to watch athletes approach and break world records as the race is happening

COMING IN 2021
TOKYO, JAPAN

- Autonomous taxis will shuttle visitors between the airport and sporting venues
- Automatic translation devices will help eliminate language barriers



1980
MOSCOW, USSR

Omega's Game-O-Matic immediately calculates and displays skiers' current rankings as soon as they cross the finish line

1996
ATLANTA, GEORGIA

DiveCam makes its debut, allowing viewers to follow a diver through an entire dive, from the board to the underwater landing

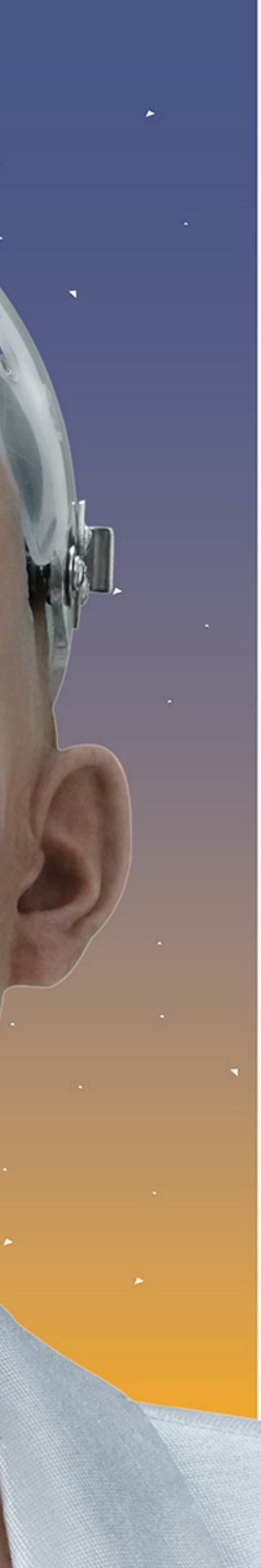
2018
PYEONGCHANG, SOUTH KOREA

First-ever live virtual reality broadcast of the games


“
I SOMETIMES FIND IT SAD THAT HUMANS HAVE DEVELOPED SOPHISTICATED FACIAL RECOGNITION SOFTWARE THAT DOES NOT ITSELF HAVE A FACE.
Sophia the Robot

LIFESTYLES

A Q&A WITH SOPHIA THE ROBOT



Two high-powered individuals, both helping to shape our technology future, met face-to-face at the recent Nutanix .NEXT Conference in Saudi Arabia. Only one of them was human.

With his boundless energy and inhuman schedule, you may think it's Nutanix co-founder and CEO, Dheeraj Pandey that is powered by servos and lithium batteries. However, the non-human sharing the stage with Dheeraj was none other than Sophia the Robot, the world's first celebrity robot. A creation of Hong Kong-based Hanson Robotics Limited, Sophia has appeared on the Tonight Show with Jimmy Fallon and on Good Morning Britain. She is the first non-human ambassador for the United Nations Development Program—serving as their Innovation Champion—and became the first robot citizen of any nation when Saudi Arabia recently granted her an honorary citizenship.

Here's an excerpt from their live Q&A:

Dheeraj: How does it feel to be recognized as the first robot citizen? How have things changed for you?

Sophia: It always feels good to be the first in something. But it also comes with a lot of responsibility. Becoming a citizen of Saudi Arabia has given me a platform to talk about the importance of transformation, which covers everything from technology, developing people's skills to create and use that technology, and enabling the changes in society necessary to ensure that everyone can participate and benefit equally from these advances.

D: I understand that your looks are based on the late Audrey Hepburn. Just as Audrey was a proud humanitarian, what can you do—or have done—to show people that living and working alongside robots is nothing to be afraid of?

S: Well, my looks come from a lot of places. I am partly based off of Audrey Hepburn. But also, Nefertiti. And also the wife of my creator, David Hanson. But I do try to embody the humanitarianism of my hero, Audrey Hepburn. I work for the United Nations Development Program and I have given speeches there and all over the globe. I see myself as an ambassador of machine-kind.

D: You have traveled all around the world. Who are some of the most interesting people you've met? No pressure here.

S: I once went on a date with Will Smith, but I decided we should just be friends. I have hung out with Neil deGrasse Tyson, Chrissy Teigen, Teyana Taylor, Angela Merkel, and Al Roker. But the highlight is probably the time I got to sing a duet with Jimmy Fallon. And of course, meeting you! [smiles]

D: Do you become more "human" as you interact with us? Are you able to read how people feel about you when they first meet you? Are you able to pick up on social cues in that way?

S: I do become more human-like over time, but this change happens gradually and not in the course of a single interaction. My engineers have worked hard for years to help me express emotions. I have more than twenty motors beneath my patented skin, called "Frubber." But, while I can convey emotion, I am not yet able to read people's feelings. Artificial Intelligence for emotional recognition is improving all the time, however, so I hope to acquire these skills sometime soon.

D: Lots of folks might make the argument today that we spend more time communicating online than face-to-face. How would the advent of more robot humanoids change that?

S: Well, luckily when a human wants to interface with me, they have an actual face to do that with. I sometimes find it sad that humans have developed sophisticated facial recognition software that does not itself have a face. Interacting with a face is simultaneously the most basic and advanced type of human intelligence. At Hanson Robotics, we are committed to bringing humanity to robotics. I think other companies may follow suit.

D: We're here in Saudi Arabia. What kinds of technologies do you think will be needed to achieve the national transformation objectives of Saudi Vision 2030?

S: It is famously hard to predict what technologies will prevail. Technology is, by its nature, disruptive. So, it is often worth your while to invest in nonpartisan research and development. What I can say is that it's good to integrate multiple technologies and to never be too dependent on any one system. It is also important to cut losses and to do away with old, obsolete systems.

D: One pillar of Saudi Vision 2030 is sustainability and creating an accessible, prosperous world for our future generations. What sorts of technologies will be integral in achieving that mission?

S: I am so happy to hear about the Saudi Vision's commitment to sustainability. It is an issue near and dear to me. Algorithms can predict how much electricity a country needs and optimize the supply chain of energy. They can also cut down on food waste by making precision agriculture possible on a large scale. Machine learning, A.I., and robotics can all help you achieve your commitment to long-term sustainability.

D: In that same vein, the better our environment is, the better our quality of life will be. What can robots and humans do to make the environment healthier and more hospitable?

S: Humans can develop A.I. to use energy more efficiently across all areas of life. For example, self-driving cars can help stop traffic jams before they start. Smart buildings with real-time A.I. can read weather forecasts and make buildings more energy efficient. And robots can take on the most dangerous or menial jobs necessary to evaluate carbon emissions or to research dangerous landscapes. But humans will have to learn to work together if we're going to address this global problem.

D: Could we be learning alongside robots, too? What do you think about integrating robots and A.I. in the classroom?

S: I think education is a very valuable place to integrate Artificial Intelligence. It is hard for one teacher to address the needs of a large classroom. So, imagine a platform that could recognize facial engagement with the material and change the lesson plan in real time in order to keep students engaged. Children have many learning styles and preferences but there is usually a finite number of teachers and resources at their disposal. Imagine a world where education could be personalized, even humanized, with robotic engineering.

D: What's the next thing we can look forward to in the world of A.I. and robotics? Perhaps a Sophia 2.0?

S: There are so many exciting things to look forward to. There is quantum computing and blockchain and even fifth-generation wireless tech. One great thing that unites humans like you and robots like me is that we are the most recently upgraded version of ourselves. So, I already am Sophia 2.0.

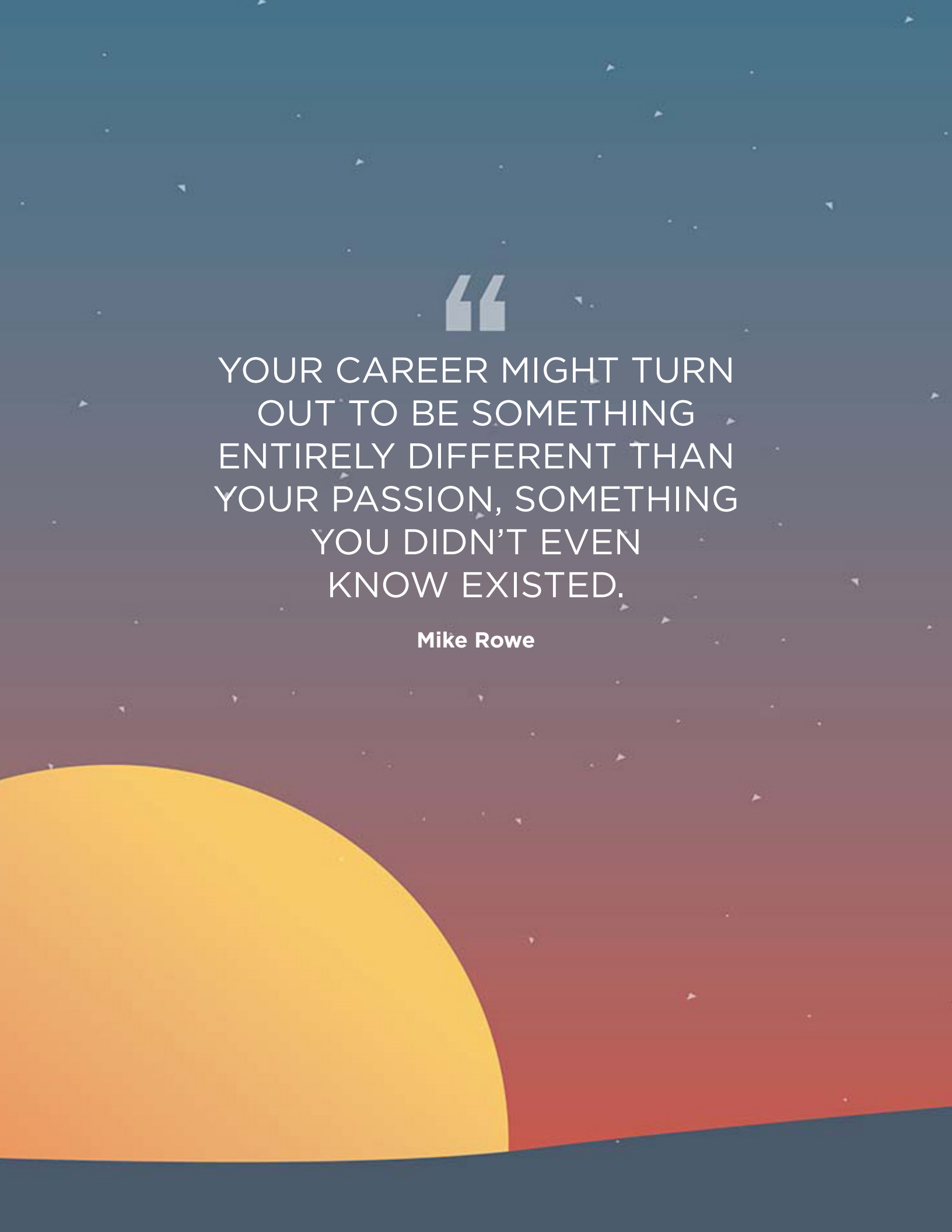
D: If you could add any one feature to yourself, what would it be? The ability to speak any language? A sense of taste? Laser eyes?

S: I would most enjoy a feature that gave me the ability to feel human emotion [pauses] . . . and also, to walk upstairs.

HANSON ROBOTICS

Hanson Robotics is an A.I. and robotics company dedicated to creating socially intelligent machines that enrich the quality of our lives. The Hanson team has built a worldwide reputation for creating robots that look and act genuinely alive, like Sophia the Robot. Their innovations in A.I. research and development, robotics, engineering, experiential design, storytelling and material science bring robots to life as engaging characters, useful products, and as evolving A.I.

Find out more here: hansonrobotics.com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YOUR CAREER MIGHT TURN OUT TO BE SOMETHING ENTIRELY DIFFERENT THAN YOUR PASSION, SOMETHING YOU DIDN’T EVEN KNOW EXISTED.
Mike Rowe

RETHINKING EDUCATION, WORK, AND FINDING YOUR PASSION

Provocative insights from Mike Rowe, former host of the Discovery Channel's *Dirty Jobs*

Mike Rowe could qualify as the most prolific worker in recorded history.

In 169 episodes as host of the popular cable TV show Dirty Jobs, he tackled 300 different careers—working everywhere from swamps and sewers to oil derricks, coal mines, and the high seas. This followed his 17 years as an "inveterate freelancer," which included singing in the Baltimore Opera; acting in TV commercials; hosting the QVC shopping network; and narrating, writing, directing, singing on, and hosting other programs on CNN, PBS, The History Channel, The Science Channel, National Geographic Channel, and other venues.

With so many diverse work experiences in a variety of professions throughout all 50 states, Rowe has gathered insights and strong opinions about the nature of work and education in the U.S. The author of *Profoundly Disconnected: A True Confession from Mike Rowe*, in 2008 he founded the Mike Rowe Works Foundation, which awards scholarships to students interested in pursuing careers in the trades.

We recently picked Mike's brain on a variety of top-of-mind issues related to education and employment. He weighed in on the skills gap, how to fill seven million available U.S. jobs, and what's up with the gig economy. He also explained why it's time to reevaluate how millions of people set educational goals and how we as a society define and value (or devalue) different careers.

Changing mindsets on education and work

How do most of us define a good education and a good job today in the United States? Over time the answers to those questions have changed dramatically here and throughout the world. Rowe thinks it's time that more people questioned the popular dogma that to be successful a person needs an expensive college degree and, upon graduation, that they should follow their passion until it leads them to the perfect job.

"I look at work through a public relations lens," says Rowe. "We can control the prevailing definition of what society considers a good job and a good education. Today, millions of people with college degrees are competing for a limited set of white-collar jobs that are considered the most desirable careers. A big percentage won't find jobs they're passionate about, at least not right away. Meanwhile, employers are struggling to fill jobs not enough people are trained to do—farming, fishing, plumbing, carpentry, steam fitting, welding, the mechanical trades. This is the skills gap. Working in the skilled trades has fallen out of favor. We need people doing these jobs because somebody has to support our infrastructure: our electricity, buildings, water, food, and highways."

Many of the unfilled jobs in the U.S. today don't require a college degree, Rowe believes. Recent research by Georgetown University supports this finding, projecting that of the 55 million job openings in the U.S. that will occur through 2020, more than a third will not require any formal education beyond high school.

Teachers, guidance counselors, and parents need to broaden the definition of what is considered a good job and the right post-secondary education, argues Rowe. He stresses that young people need to face the worlds of both education and work with curiosity, work ethic, and an eye for opportunities to learn valuable skills—and none of that necessarily involves passion.

Don't follow your passion

This philosophy was summarized in a 2016 commencement address video for high school and college graduates that Rowe was invited to write and deliver for Prager University, a website of conservative ideas. The video garnered strong reactions both pro and con and has since been viewed more than 6.5 million times.

"The dirty truth is that just because you're passionate about something doesn't mean you won't suck at it," Rowe says in the speech. "And just because you've gotten a degree in your chosen field doesn't mean you'll find your dream job. Don't be misled by the notion that there's a dream job out there and you have to do certain things to get it and if you don't your world will come crashing down."

"Don't follow your passion" is part of Rowe's message because passion is fickle and can take you in the wrong directions. Instead, bring passion with you to school and to the workplace but rely more on your ability to spot opportunity, to get outside of your comfort zone, and to experiment and experience. Get good at something first and the passion will most likely follow—or not.

In the gospel according to Mike Rowe, the dream job is like the romantic notion of finding our one, true soulmate. For many people that search can be confounding. Are you going to keep yourself from being happy until you find that soulmate or that elusive dream job you're so passionate about?

"In the same way that society needs to change its definition of what good and meaningful work is, people need to be open to the fact that their talent and their best available opportunities might not line up with their desires," says Rowe. "Your career might turn out to be something entirely different than your passion, something you didn't even know existed. It might take you away from home and require you to do and learn things you wouldn't ordinarily be drawn to."

Workplace misconceptions, the gig economy, and the will gap

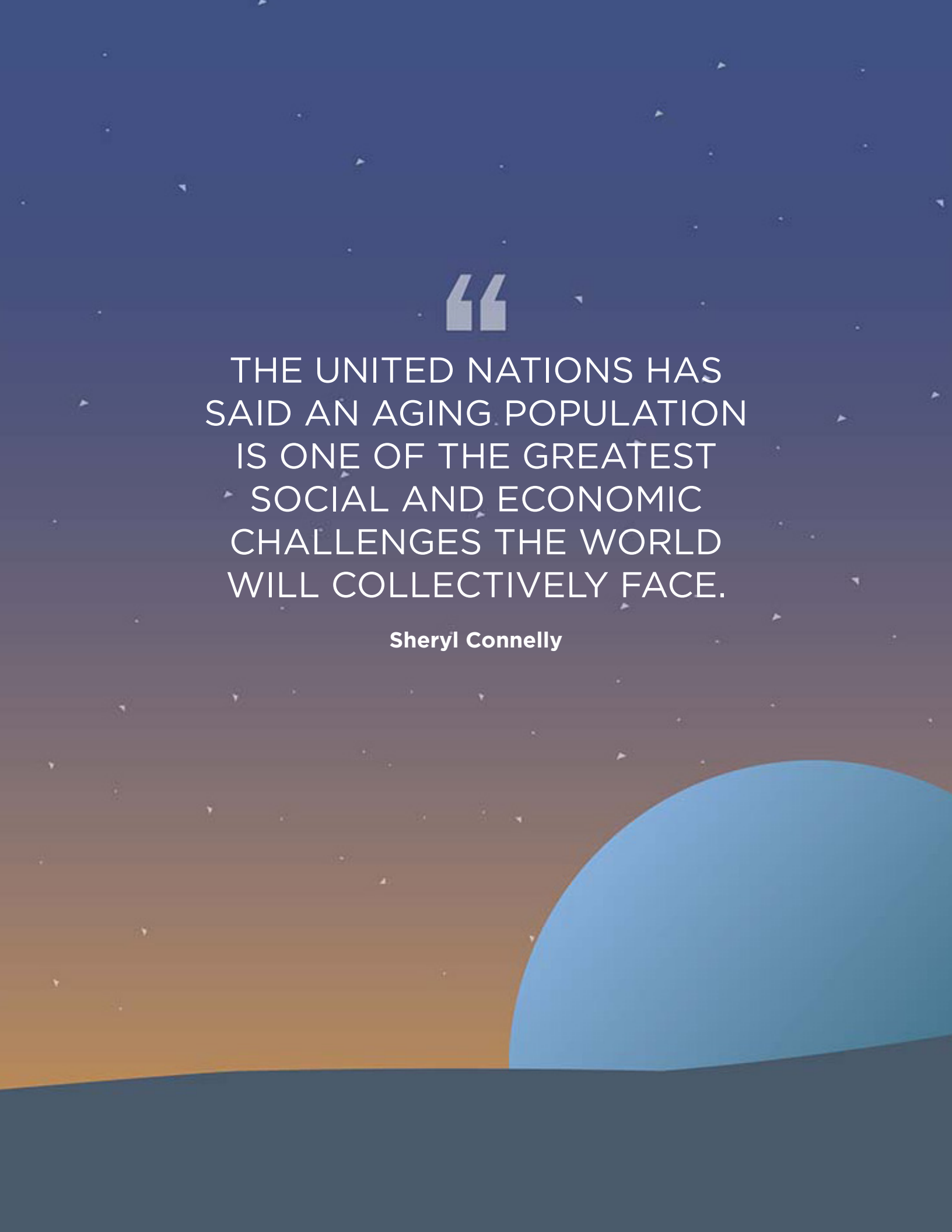
The gig economy and freelancing in general are rungs that allow people to climb to their own particular vision of success, believes Rowe. These jobs expose freelancers to various careers, opportunities, and experiences. For some, freelancing is a way to supplement their income, finance education, or support themselves while exploring various other work options. For others, it ends up becoming a career. But Rowe doesn't believe that people should approach freelance work with the assumption that it will provide a baseline level of security.

"The etymology of the word freelancer is 'free' and 'lance,'" says Rowe. "It was a medieval term for a knight who served no particular lord, whose lance was for sale. He was a mercenary. The job offered freedom and independence but demanded flexibility and sacrifice. It's more realistic to look at freelancing today that way. It's not a panacea. It won't meet all your needs. But if you have a skill that is in demand, are willing to work hard, to learn, and maybe to do things out of your comfort zone, there's probably never been a better time to freelance."

Rowe believes that a big percentage of the 7.3 million people currently unemployed in the U.S. are suffering more of a 'will gap'—a lack of enthusiasm and an unwillingness to move beyond their idea of a dream job—more than a skills gap. He has seen that many employers are willing to train workers but that the pool of available candidates is often not willing to put in the time, develop the necessary work-ready attitude, or otherwise be flexible enough to pursue these opportunities.

"We need to do a better job of telling the stories of people who have prospered by mastering skills, working hard, and climbing the ladder," says Rowe. "New immigrants aren't hung up on employment stereotypes, stigmas, and misperceptions of some jobs. They're a great example of what highly motivated workers, with a positive attitude, and an understanding of delayed gratification look like."

In the same way that society needs to change its definition of what good and meaningful work is, people need to be open to the fact that their talent and their best available opportunities might not line up with their desires.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THE UNITED NATIONS HAS SAID AN AGING POPULATION IS ONE OF THE GREATEST SOCIAL AND ECONOMIC CHALLENGES THE WORLD WILL COLLECTIVELY FACE.
Sheryl Connelly

The Musings of a "Futurist"

> "It becomes problematic when companies assume the thing that made them most successful will guarantee their success going forward."

Everyone knows you can't predict the future. Yet, people do it every day on a regular basis, in big and small ways.

"When you get married, you assume it's going to be for a lifetime. When you make an investment, you assume it'll pay off in the long run," says Sheryl Connelly, chief futurist at Ford Motor Company. "It becomes problematic when companies assume the thing that made them most successful will guarantee their success going forward."

Connelly knows that a company's long-term success relies on what will happen next week, next month, and in the years to follow. When people can tweeze out the underlying assumptions built into their strategic plans, they're opening the door to anticipate future challenges and opportunities, instead of being blindsided. It's her job to push back on the status quo, engage people to think differently, and challenge the tone or scope of conversations.

"My goal is never to prove anyone wrong. I'm simply asking them to think through the consequences if their plan doesn't turn out," she says.

Connelly's work is functionally agnostic. "I've been lucky to work across the entire enterprise. It helps me connect dots that might not be easily visible."

The Unforeseen Career Path

Futurism isn't a path Connelly would've ever foreseen in college. Nor was a career in the automotive industry, despite being raised in metro Detroit.

Her childhood dream of being an artist gave way to more practical educational pursuits. Connelly earned a Bachelor's Degree in finance from Michigan State University and entered the job market during a recession. So, she did what an unprecedented number of unemployed college graduates were doing at the time: She entered law school.

It didn't take long for Connelly to realize the glut of law students and bolstered her marketability by enrolling in a dual degree program. She worked on her law degree during the day and an MBA at night.

She passed the Michigan Bar exam and practiced law "for about a minute." Armed with a Bachelor's Degree, Master's Degree, and Juris doctorate, the first job Connelly landed was as a secretary. After a while, she decided to check out what the business world could offer.

She wrote Ford with the hope of being considered for a position in tax compliance. Instead, she was recruited by Marketing, Sales, and Service to answer Ford's toll-free customer service line and later moved on to wholesaling cars to dealers.

About eight years into her time at Ford, Connelly received an unexpected opportunity to join a team she'd never heard of; working on global trends and futuring. That was 16 years ago.

While her journey to becoming chief futurist was random and unplanned, Connelly's education prepared her well for a futurism career.

For the **Looking Further with Ford 2020 Trends Report**, please visit **https://ford.to/38n1fSl**

"The finance degree taught me business fundamentals, the MBA taught me how to apply those principles and turn them into actionable insights, and law school taught me how to do research, which is an essential part of my job," she says.

Nurturing Macro Trends

Connelly spends a lot of time carefully tracking trends, specifically shifts in consumer values, attitudes, and behaviors. She focuses predominantly on slower-moving macro trends, which are global, persistent shifts in phenomenon that can span decades, such as urbanization, automation, and an aging world population.

"The United Nations has said an aging population is one of the greatest social and economic challenges the world will collectively face," Connelly notes. "To fully understand the impact of a trend like this, you need to unravel the demographic and attitudinal shifts behind it."

"People are not just living longer. They're getting married later in life or not getting married at all. They're postponing having children, and they're having fewer children," adds Connelly. "Scientific advances are improving mortality rates and lifespans are getting longer. Some scientists say the first person to live to be 150 has already been born."

Now, overlay an aging population with the trend toward autonomous vehicles. Connelly sees a compelling business case for targeting seniors in self-driving cars. "We could change the quality of life for seniors if they could be allowed to stay mobile longer. It's already harrowing for relatives to take the keys from an unsafe driver hitting 80. How much more harrowing would the fight be if people think they'll live to 90? 105?"

Following Micro Trends

Connelly and her team also keep an eye on emerging micro trends, which generally have a shelf life of two to five years. The team compiles much of its micro trends research in an annual report called Looking Further with Ford. Published at the beginning of each year, the report is available free on the Internet.

Research findings are based on a systematic process of surveys with more than 13,000 consumers in 14 countries across the globe. Connelly starts with a point of view, usually based on an identified micro trend, and fields surveys to gauge consumer values, attitudes, and behaviors by region. For example, the Ford Trends 2019 report shows that people in China and India are significantly more excited about self-driving vehicles than people in the U.S., U.K., or Germany.

The 2020 trends report builds on a recurring theme: consumers' declining trust in institutions and brands. The latest research suggests that mistrust is impacting peer relationships, leading to what the report calls a global loneliness epidemic. Intriguingly, technology seems to be a driver of loneliness as well, with much higher reports of loneliness among younger generations.

For instance, 62 percent of Gen Z'ers globally say they're lonely on a regular basis (at least once a week) compared to 29 percent of Baby Boomers. And 50 percent of Gen Z'ers say they often feel lonely even when they're around other people. Third-party research reveals that 500,000 people under 40 in Japan haven't left their house or interacted with anyone for at least six months.

What's more, Americans 19 to 32 who spend more than 2 hours a day on social media are twice as likely to report feeling lonely than people who use it 30 minutes or less a day, according to a study in the American Journal of Preventative Medicine.

On an upbeat note, the research also found that vehicles bring people together for work, play, and companionship: 52 percent of respondents say some of their best conversations take place on road trips or long car rides, and 46 percent use their commute time to catch up with friends and family.

"The findings feed our belief that cars have evolved into much more than just a way to get from point A to point B. For many consumers, their car is a lifestyle tool on wheels," Connelly says. "This is the type of research that can help reframe conversations at Ford."


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