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## DIGITAL EDGE50 AWARDS 2019

As part of their digital transformation, **DIGITAL EDGE 50** award-winning organizations find unique ways to make customer interactions more meaningful, seamless, and faster.

# HUMANIZING THE DIGITAL EXPERIENCE

BY STACY COLLETT

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# CIOs BREAKING CHAINS: THE RISE OF DATA-DRIVEN, COGNITIVE SUPPLY NETWORKS

**IT leaders will be expected to play a key role in effecting this radical change by harnessing the power of new, transformative technologies**

The emergence of Industry 4.0 is fast transforming how businesses manage their key functions. Digitalization — driven by new disruptive technologies such as IoT, AI, machine learning, big data & analytics, cloud computing, blockchain, 3D printing, among others are reshaping every aspect of business. Supply chains, more complex than ever before, stand to benefit tremendously from these developments.

At the core of industry 4.0 is data (or information), and its connectivity and exchange for decision-making by cyber physical systems or humans. With increasing digitization, tons of structured as well as unstructured data, is generated from disparate sources and systems.

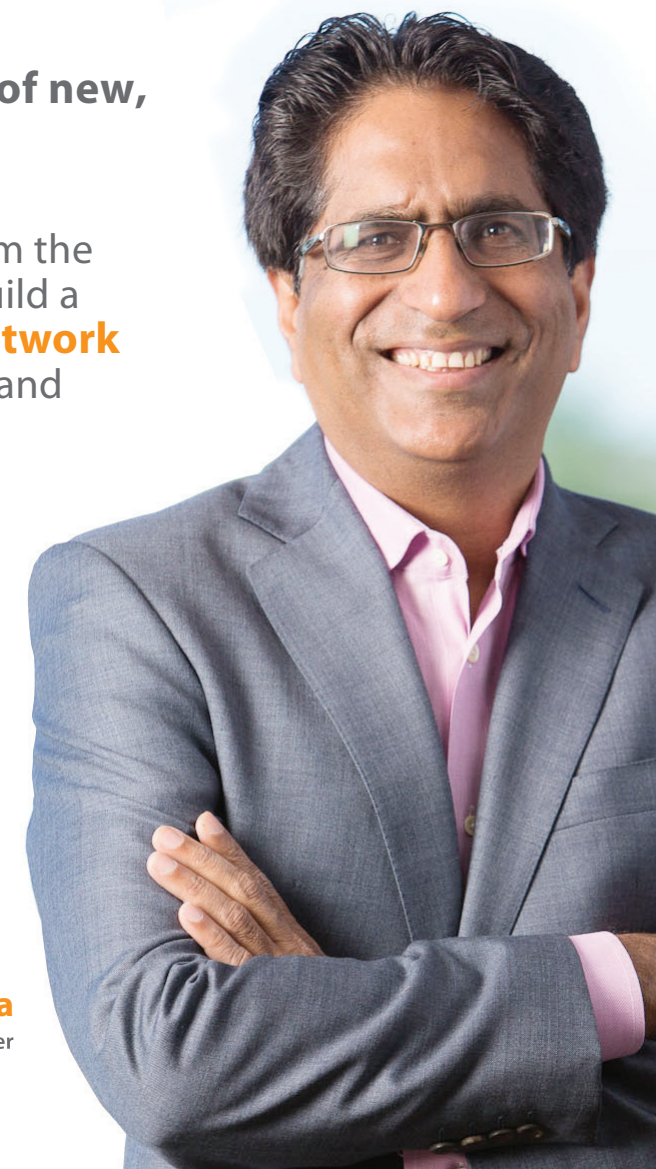
CIOs and enterprise IT teams now have both an opportunity and challenge to make this data easily accessible across the enterprise, offering stakeholders a unified view of the supply chain with real-time data visibility to enable informed, effective, and timely decision-making.

This vision of the digitally transformed supply chain now has a name: Cognitive Supply Nexus™. It will enable enterprises to better analyze and understand supply chain data, help automate complex and labor-intensive processes, effectively forecast supply and demand scenarios, respond quickly to dynamic market conditions, and pro-actively mitigate risks.

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“ We're helping enterprises transform the conventional supply chain and build a digital-native **cognitive supply network** that enables massive cost savings and competitive advantage. ”

**Dr. Subhash Makhija**  
Chief Executive Officer & Co-Founder







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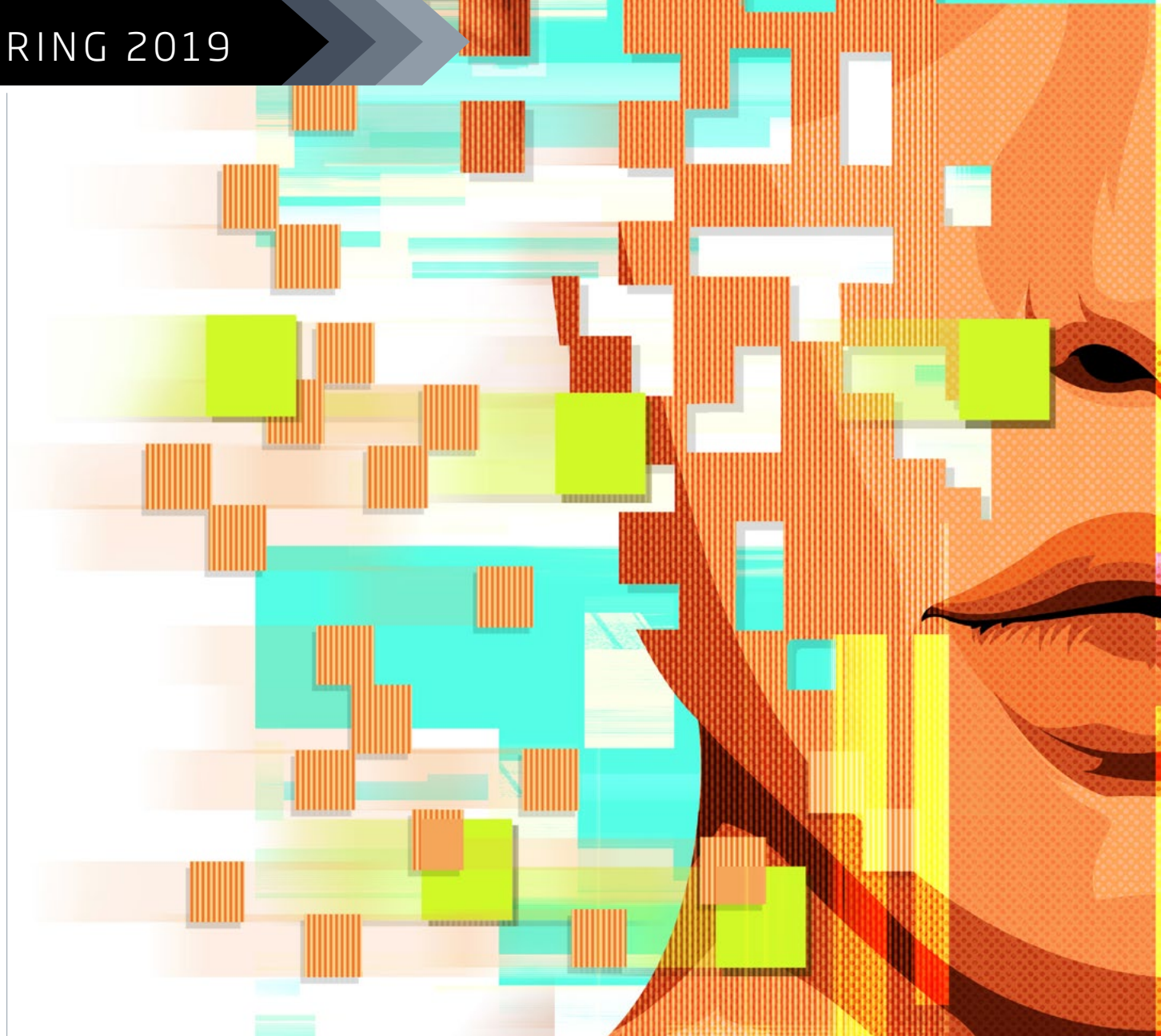
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BY STACY COLLETT

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# How to establish a thriving IT innovation hub

**These days, innovation is crucial for business success. Here's how to build an in-house tech hub that will help move your enterprise forward.**

BY JOHN EDWARDS

**Aerospace and industrial** giant United Technologies depends on innovation to meet the needs of its corporate and government customers. To ensure a steady pipeline of profitable new ideas, the company created United Technologies Advanced Projects (UTAP), a startup-like organization that builds and pilots products and services with the potential to positively disrupt the company's various business units.



“Innovation hubs of all sizes and scope are truly accelerating innovation by enabling organizations to move with speed ... and embrace a culture of collaboration and agility,” says Jason Chua, UTAP’s executive director. “These groups help a company to think differently and approach customer challenges through a new lens.”

The rapid pace of innovation requires enterprises to leverage an ever-changing pool of emerging technologies. “Having your own technology hub that can research new areas of innovation and equate those back to your business imperatives is critical,” says Nelson Petracek, CTO of TIBCO Software, an integration and analytics software developer that depends on its hub to remain competitive in a rapidly evolving and highly competitive market. “A hub can help you determine which of the 5,000 different acronyms that are thrown at you each day actually apply to your

## The rapid pace of innovation **requires enterprises to leverage** an ever-changing pool of emerging technologies.

business and can be used to drive imperatives forward.”

Building a tech hub and ensuring that it delivers a reliable flow of business-enhancing tools and services requires careful planning, intelligent management and a long-term financial commitment. Here’s how to get started.

### **1 Define the mission**

The hub’s mission should be to uncover and develop useful and marketable technologies, not to meet pre-determined goals. “An innovation hub enables organizations to quickly experiment with ideas to determine the feasibility of those concepts becoming actual products,” says Rob Krugman, chief digital officer at Broadridge, which provides advanced solutions to financial services businesses.

“Creating the hub outside of the primary business lines enables this experimentation to be performed independently without concern for disruption of existing businesses and operational models.”

Kevin Baril, national managing principal of innovation at professional services firm Grant Thornton, recommends a two-path approach focused on cultural transformation and the eventual deployment of innovative technology platforms. “The culture journey should be grounded in the democratization of the process — everyone participates, everyone innovates,” he explains. Ideas must be refined, progressed and prioritized based on merit. “Teams need to see [that] their ideas are heard, considered and acted upon in some fashion,” he notes. “The

collaborative process of ideation and innovation fosters agility and requires individuals to incorporate other colleagues’ points of views into their own.”

### **2 Organize management and staffing**

A hub should be organized and managed by a leader who reports directly to the CEO, Baril says. “The role should have an enterprise-wide mandate, and the individual should be well-versed in the firm’s mid- and longer-term strategy,” he explains. The hub director should also work closely with human resources, IT, marketing, communications and business line leaders, he says.

At UTAP, talent from engineering organizations across United Technologies is acquired via an

“employees in residence” model. The approach allows team members to contribute to UTAP projects full time and then return to their respective home business units when their work is completed. “We are also recruiting

looking for people who play with technology as part of their life and are self-motivated to try out new and different types of technologies, not just for their own use but also to discover how these technologies map to the enterprise.”

research are two distinct needs, and budgets must adequately support both functions. “With IT budgets being what they are, it can be difficult for that department to be the sole financier,” Petracek notes. “The business side of an organiza-

United Technologies’ engineering and business sites worldwide. “The proximity enables the UTAP team to deeply collaborate with other ... employees and ultimately further the company’s baseline knowledge,” Chua reports.

**“Innovation hubs** of all sizes and scope are truly accelerating innovation by enabling organizations to move with speed ... and **embrace a culture of collaboration and agility.**” —JASON CHUA, UTAP’S EXECUTIVE DIRECTOR

the world’s top talent with flexible compensation models, agile contracting and partnership mechanisms to ensure that we are always working with the brightest minds,” Chua says.

Petracek looks for team members with a sharp attitude and aptitude. “Picking staff members for a particular skill set is kind of impossible in this context because you’re looking at new and innovative technology,” he explains. “I’m

**3 Arrange financing** Enterprises use various methods to finance hub operations. Baril believes operating and capital expense budgets should be centrally allocated. “Funding for innovation efforts should be viewed akin to research and development — essentially an investment in future competitiveness,” he advises.

Supporting ongoing IT services and conducting future-oriented

tion has to appreciate the potential and value this type of [research] work can bring.”

**4 Select a location** A tech hub can be located almost anywhere — at an existing facility or new site or even spread across multiple venues. Opinions differ on which approach works best. UTAP, for instance, is structured as a distributed organization, with project teams located within

Krugman, on the other hand, believes that a hub should have easy access to a deep pool of talented innovators. “Typically, today, that means access to world-class designers, developers and product strategists,” he says. “Ideally, the location can serve as a studio where clients can be brought in to innovate with the internal teams.”

Regardless of location, hub teams should be assembled based on skills and capabilities and



be led in a way that's consistent with any professional consulting organization, Baril says. "It's also important for client-facing innovation activities to occur in close partnership with the client — not off in a distant center," he adds. "A close working relationship between an engagement team and the client allows for experimentation and iteration to reach the right solution to solve a particular business challenge swiftly."

## 5 Consider partner involvement and collaboration

Business partners are critical to the hub model from a capability, capacity and time-to-value perspective, Baril says. "Organizations that tap both internal and outside communities tend to gather the diversity of thought and experience that together deliver the most innovative solutions," he notes.

Partners can be a great extension to your organization, Petracek

observes. "They see different things, work with different customers and have a larger focus on innovation," he explains.

## 6 Establish performance evaluation procedures and metrics

Both traditional and nontraditional business metrics are useful for establishing a hub's value over time. Innovation should directly drive revenue, margin and share of market expansion or preservation, Baril says. "Also, organizations should consider qualitative and quantitative metrics that cover the entire enterprise related to ideation and innovation progression activity and, ultimately, outcomes."

Krugman advises keeping a close eye on KPIs. "Some of the key items we look to be evaluated on are the number of experiments completed, how those experiments influenced existing and future products and improvement in brand positioning as a result

# "Business partners are critical to the hub model from a **capability, capacity** and **time-to-value** perspective."

—KEVIN BARIL, NATIONAL MANAGING PRINCIPAL OF INNOVATION, GRANT THORTON

of innovation with clients," he reports.

Petracek, however, believes that evaluations should be more qualitative than quantitative, since many traditional performance metrics can't be logically applied to hub research. "In some cases, the fact that something didn't work is just as important as finding something that did," he observes. What's most important, Petracek says, is "what we're delivering, how it maps to our other solutions and whether customers are interested in these new technologies and the value they can bring."

## Your takeaways

"Our industries are evolving at rapid speed, and if businesses

don't disrupt themselves, they can become open to disruption," Chua cautions. "Innovation hubs are critical to this mission."

A popular mantra applied to today's startup culture is having the ability to fail quickly. "Within innovation hubs, organizations are able to apply this type of agile approach without affecting existing businesses," Krugman says. "This benefits both the existing business by not introducing risk and the future strategy by enabling organizations to move forward without first answering all of the go-to-market concerns typically raised in a larger organization." ♦

John Edwards is a frequent contributor to CIO.



# How to be a true transformational CIO

**The CIO role has undergone significant change as organizations transition into digital enterprises. Here's how to move beyond being an operational leader.**

BY MARY K. PRATT

**A**tticus Tysen initially framed his challenges in technical terms. “I thought we had a technical problem, and that was why we couldn’t get new products out fast enough. I thought the company had too many systems and that the systems were too brittle,

and if we just fixed them, we’d be OK,” he says.

That was back in 2013, when he became CIO at Intuit after 12 years working on the software company’s product side.

Tysen quickly realized that the most impactful CIOs today don’t view operational excellence as the top measure of success. Instead,

they see that as the starting point and move beyond it to leading transformational change.

“We had to move to thinking about the value we provide: Is something I’m doing going to open up a new market or reduce the number of phone calls I get about billing? We still have to manage operational metrics, but frankly no

one else cares about those. You have to focus on business outcomes and business metrics,” he says.

Many IT leaders, management experts and researchers are facing the same realization that Tysen reached: The CIO position needs to evolve as organizations transition into digital enterprises.

“CIOs must be operational,



but they also need to be forward-thinking and they have to be thinking about how to generate revenue,” says Anna Frazzetto, chief digital technology officer and president of technology solutions at Harvey Nash, a global recruitment consultancy and IT outsourcing service provider.

### From navigational to transformational

Harvey Nash and KPMG’s 2018 CIO Survey found that the top priorities listed by CIOs reflect their expanding responsibilities. And it is telling how these priorities have changed over the past five years: “Improving business processes” and “developing innovative new products and services” each increased 2 percent over 2013, and “enhancing the customer experience” made its debut on the list in 2018.

On the other hand, traditional CIO priorities are not getting the same focus. Saving costs — the No. 1 priority in 2013 listed by 71 per-

cent of respondents — is now a top priority for only 55 percent of CIOs. “Delivering consistent and stable IT performance” saw a similar decline, from 70 percent in 2013 to 62 percent in 2018. “Increasing operational efficiencies” also dropped, from 68 percent to 62 percent.

The study results show the wide range of expectations that CIOs must meet today, Frazzetto says. “CIOs need to manage and play an active role in being able to drive the organizational forward. They have to be nimble and responsive. They can’t be all process-oriented,” she adds.

The shift to a stronger focus on transformation requires a new type of CIO, one focused on the organization’s customers, its revenue stream, its growth, its market and its future, experts say.

Deloitte’s 2018 global CIO survey found that the top priorities for its 1,437 respondents were transforming enterprise business operations and driving top-line

“CIOs must be operational, but they also need to be **forward-thinking** and they have to be thinking about how to **generate revenue.**”

— **ANNA FRAZZETTO**  
CDTO AND PRESIDENT OF  
TECHNOLOGY SOLUTIONS,  
HARVEY NASH

growth and revenue.

That takes a CIO who understands value creation, top-line growth and disrupting markets, says Kristi Lamar, managing director and the experience leader for the U.S. CIO Program at Deloitte Consulting.

Lamar says transformational CIOs have their deputies focus on operator and technologist tasks, leaving themselves to focus on being a strategist and catalyst.

### Painting a compelling vision of the future

Tysen has seen that in his own evolution. Yes, he says, CIOs still need to execute flawlessly, but they need to understand that’s a given. As he says, “The end customer doesn’t care whether their interaction is on a legacy system or a modern system — it just has to be seamless.”

As CIO — he says his primary focus is on how enterprise IT serves the company’s customers, a mindset he developed while working on Intuit’s product team and carried into the IT department. He requires IT team members to observe their business-side colleagues, such as call center workers, as they interact with the company’s customers so they can better understand those touchpoints and where they can improve.

Tysen says he does this because the line between what IT, product and customer service enables is blurring as enterprises become digital companies. He points to one of

Intuit's offerings as a case in point: Intuit customers who need help with their taxes can now interact with tax professionals via video conference. Tysen says it's hard to distinguish where the product team's and his own IT staff's contributions to this capability begin and end.

CIOs also must be able to communicate their visions for the future based on why it matters to the company and its customers, Tysen says.

"The typical story of a tech presenter is spewing out facts. But you have to start with what the future looks like, what's the change you are trying to create, what are you going after, what's the outcome and then talk about how will you get there," he explains. "You need to paint a compelling picture of what the future can be. That's the role of today's CIO."

### Traditional vs. transformational CIOs

Tim M. Crawford, CIO and strategic adviser for advisory and holding

company AVOA, sees several characteristics dividing transformational CIOs from traditional ones.

He says transformational CIOs have positive and engaging relationships with all their C-suite colleagues, including the CEO. "They almost look like the right-hand person to the CEO," he adds.

They see the company's customers as IT's customers. "They know what the customer looks like and what the customer journey is, and they think about how technology can make this customer journey better," Crawford says, noting that transformational CIOs even meet directly with customers to get a better line of sight into the touchpoints

they have with their organization.

Tom MacMillan, CIO of EmblemHealth, one of the country's largest nonprofit health insurance and wellness organizations, believes transformational CIOs need to look "toward the future, 2020 and beyond, and at what shift from legacy practices to digitalization is required to make the business operating model successful in the future."

MacMillan says he works with his C-suite peers to articulate what outcomes the organization wants in the future and to devise how they're going to use technology to get there. He talks about being an "enabling coach" and creating

capabilities that the business can control and change as their markets evolve and their needs shift.

"Instead of the business being a user, and because we're moving to cloud-based platforms like Salesforce as a service, we look for our business units to develop competencies to be nimble. So they're engaged in ownership of the products they use, and that tends to let us move more quickly to release new functions or have better conversations with the vendor because we're all around the table to talk about the business goals," he explains.

As a result of this shift, CIOs and their IT departments need

**Transformational CIOs** need to become comfortable with **diffusing control** of some IT throughout the organization – the most modern incarnation of **shadow IT**. – **ANNA FRAZZETTO**, HARVEY NASH



to bring a different mindset to the table, McMillan says. “There was this whole notion that IT was a service that was provided to everyone else. They have to be service-oriented, but they have to measure their actions in value, not in ‘Did I meet my commitments to the business?’ but ‘Did we create the value we wanted for the business?’” he adds.

Similarly, Frazzetto says transformational CIOs need to become comfortable with diffusing control of some IT throughout the organization — the most modern incarnation of shadow IT.

They have to move past project mode, recognizing that transformation is now a constant and the work is never done, Frazzetto continues. They have to have a higher degree of financial acumen, understanding not just CapEx vs. OpEx or profit and loss but also revenue creation. And they have to be more compassionate, understanding and engaged than was required in

**“You need to paint a compelling picture of what the future can be. That’s the role of today’s CIO.”**

**—ATTICUS TYSEN,**  
CIO, INTUIT

the past — even extraverted.

“They need to be able to relate to people, and they have to want to listen to what people say,” she adds.

### **Transformational title**

Marty Boos, the CIO of ticket exchange site StubHub, says he, too, has found that the top IT job requires different skills today as the position has added transformation tasks to its operational responsibilities.

He says he still must “make sure our systems are 100 percent

available” so that customers can list, find, sell and buy tickets. But he has the equally, if not more, important task of leveraging technologies that allow for greater speed and innovations, such as developing capabilities to take new forms of payment in weeks — not months.

To do this, Boos meets more regularly with peers, including daily check-ins with the head of product and product owners, to get better visibility into workflow as well as potential obstacles.

He similarly supports more cross-domain coordination within his own IT team.

Boos says he focuses on being a leader to his own team, ensuring they have the needed training to work with new technologies and in new methodologies and still bring their institutional knowledge to bear. And he’s investing in new technologies, such as Pivotal Cloud Foundry, to add flexibility to the IT stack by enabling his team to

develop and deploy using the same tools regardless of what cloud will host the finished applications.

CIOs also need to embrace that flexibility if they want to lead transformation, Boos says, adding, “We’re in a realm where we’re in continuous change, so don’t be afraid of continuous change.”

At the same time, though, they need to be realistic about how long transformation takes. CIOs experienced in transformation, management experts and researchers say IT leaders need to temper enthusiasm for change with patience and reasonable expectations — both for themselves and their organizations.

“There is a small percentage of CIOs who have really earned the title of being transformational,” Lamar says. “But for most CIOs, it’s going to take time before they get there. We’re at the very beginning stages.” ♦

Mary K. Pratt is a frequent contributor to CIO.



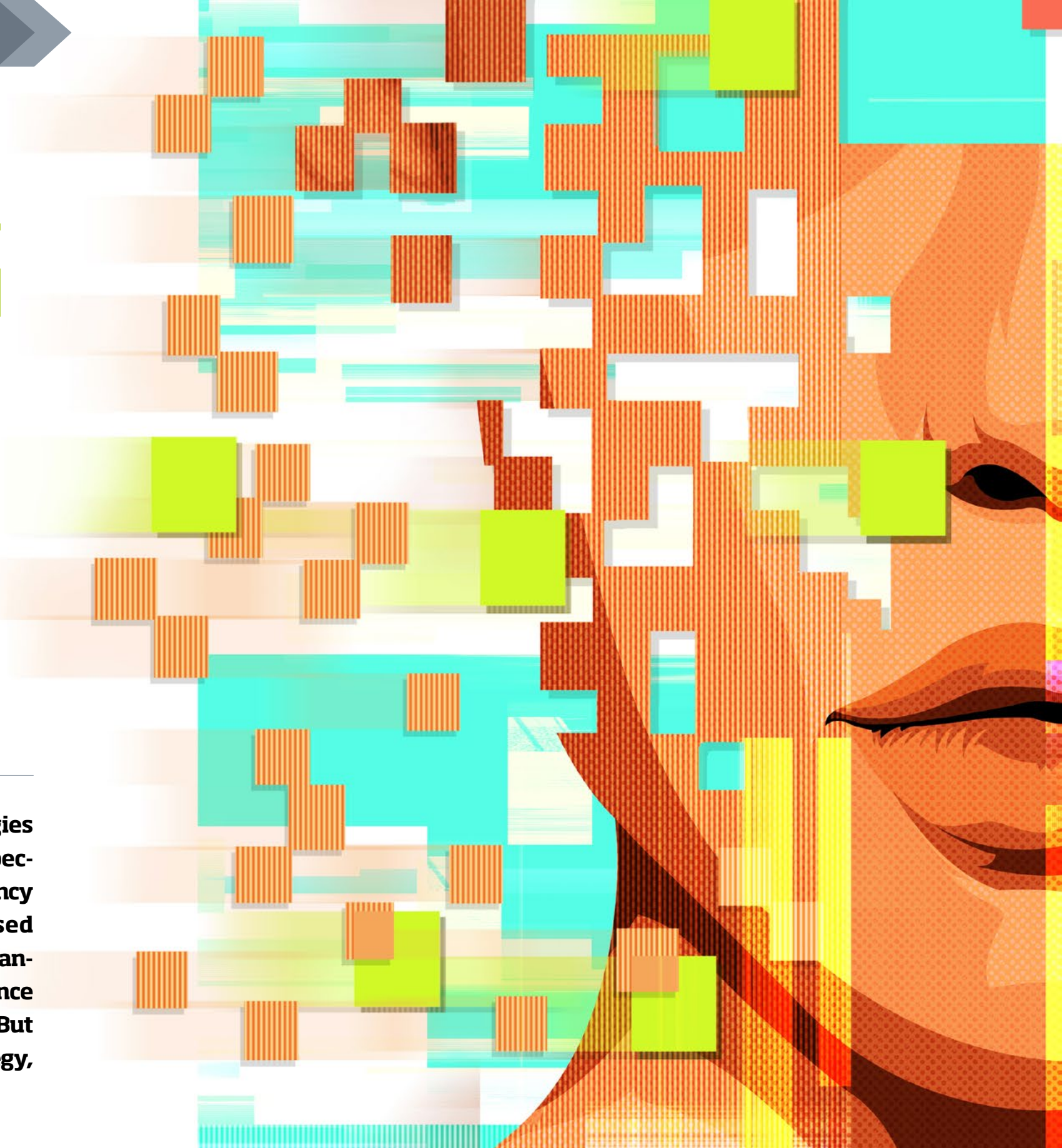
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**T**oday's digital business strategies come with a list of enticing expectations: improved process efficiency through automation, increased employee productivity, better management of business performance and new revenue streams, to name a few perks. But with all of the promises offered by digital strategy, there is one simple truth:





**“The people are the center of any digital transformation. We understand that it has to work for our users or we’re not actually solving their problems or making their lives better,” says Mouneer Odeh, vice president of enterprise analytics and chief data scientist at Thomas Jefferson University and Jefferson Health in the Philadelphia area.**

**Organizations are finding that to be successful, they must improve the digital experience. Many of this year’s Digital Edge 50 award-winning organizations have done just that. Here they share how they’re using new technologies to enhance how customers experience their companies’ products.**

## Rescuer network puts motorists in good hands

**D**igitization has revolutionized the way Allstate delivers roadside assistance to members and nonmembers alike. The insurance company is even sharing its mobile technology with industries outside of its traditional circles.

Anyone who has been stranded in a broken-down car on the side of the road knows that minutes can seem like hours when waiting to be rescued. Allstate has been working to reduce the anxiety and uncertainty that come with roadside assistance since 2015,

when it rolled out its pay-per-use Allstate Rescue Mobile App. Any motorists could download the app and, with a couple of clicks, get help from a reliable service provider with pre-negotiated rates and even share the status of their rescue with family or friends.

“We have stripped down and thrown away our old ecosystem that essentially was built to ‘dispatch’ help” in an analog fashion, says Kamal Natarajan, vice president and divisional CIO of Allstate Roadside Services. Today, “we pride ourselves in offering humanized rescue experiences for our customers using digitally enabled solutions.”

**“We have stripped down and thrown away our old ecosystem that essentially was built to ‘dispatch’ help.”**

—KAMAL NATARAJAN, VP AND DIVISIONAL CIO, ALLSTATE ROADSIDE SERVICES



While the Rescue Mobile App was successful, it still didn’t resolve the amount of time motorists had to wait for help. Service providers and towing companies typically earn more money responding to municipal 911 calls than roadside calls, Natarajan explains, so they would automatically give stranded motorists a lengthy estimated time to arrival, usually about two hours.

In 2016, Allstate rolled out the Good Hands Rescue Network, the industry’s first crowdsourced rescuer network that can assist stranded motorists by bringing gas, changing a tire, jumping a battery or popping a lock – anything

that doesn’t require a tow truck.

“We were able to reduce ETAs,” Natarajan says. “What used to take two hours now takes less than 30 minutes, and it’s a lot cheaper for customers to get that kind of help.”

Today, the network includes about 2,200 active rescuers. The contractors are typically retired professionals, often car mechanics or veterans, who are looking for part-time work. They are background-checked and trained by Allstate before being allowed to respond to service requests through the app.

In 2017, Allstate decided to convert its mobile assistance technology to

microservices and make it available to external partners as APIs. It also introduced a developer portal that allows Allstate partners and prospective partners to take the APIs for a test drive.

Not only have the APIs attracted the interest of car companies, ride-sharing services and roadside service providers, but Natarajan was surprised by the interest from other consumer industries, such as family networking and location-sharing apps.

"For these companies that are promoting a sense of community, if they can provide a digital experience that helps manage anything that causes anxiety, then they want to offer it as a value proposition," Natarajan says. These partners can offer the roadside mobile app as a "vanilla" or a branded pay-per-use offering in their own product.

His advice to other CIOs embarking on similar projects: "Don't get carried away with thinking of it as a technological idea. Focus on the customer experience, and you will do wonders."

"Our success is about more than just delivering analytics and checking the box. If we're not thinking about the people who are using our solutions, we're not going to be successful."

—MOUNEER ODEH, VP OF ENTERPRISE ANALYTICS AND CHIEF DATA SCIENTIST,  
THOMAS JEFFERSON UNIVERSITY AND JEFFERSON HEALTH



## Improving patient outcomes with data analytics

**J**efferson Health is saving lives and improving outcomes by centralizing data and adding an analytics platform. Thomas Jefferson University and Jefferson Health was formed by the merger of five independent health systems and two universities within three years. Its combined data and analytics capabilities were fragmented, inconsistent and not aligned to the organization's strategic priorities.

The Jeff Insights Platform was created to make it easy to access and analyze data, deliver value quickly,

and support innovation through the use of machine learning, artificial intelligence and predictive modeling capabilities. To be successful, the platform needed to deliver the right insight to the right person at the right time in the right context, so the analytics solution was embedded directly into existing workflows, such as through its electronic health records (EHR) system.

"The technology is humanizing not only for the people who are receiving the information and acting on it, but also humanizing and better improving the lives of our patients," Odeh says. "That is ultimately what we are trying to achieve."

Shortly after roll-out, the platform began showing benefits. For instance, Jefferson Health quickly improved colorectal cancer screening compliance from 60 percent to 67 percent by identifying gaps in care or patients who were approaching gaps in care. The platform helped Jefferson create a registry of all patients with medical conditions that make them candidates for screening. Clinicians would see a reminder in the identified patient's EHR chart to discuss screening during their visit and make services available immediately. This resulted in 15 fewer diagnoses, five fewer deaths, and \$600,000 in



reduced costs per year.

The technology also helped Jefferson Health develop an Opioid Provider Scorecard that led to a drop in unnecessary prescribing. The Jeff Insights Platform helps the tech team identify patterns. It identified in the EHR system that the length of prescription had a default setting of 14 days. New medical guidelines recommended doses limited to three days. Within a month of the default value being changed to three days, the emergency room cut in half the number of opioid prescriptions of seven days or more. "This is encouraging us to think of other ways to use analytics to identify opportunities to better humanize the EHR experience for our clinicians and ultimately for our patients," Odeh says.

The new platform has helped drive \$108 million in financial impact so far, but it's still a major cultural change for the organization, Odeh says. He continues to drive engagement with the platform.

"We've stopped thinking of ourselves in terms of delivering content

and now think about how we can drive engagement and impact – to change the experience from feeling intimidated by the data to feeling empowered by it," Odeh says. "Our success is about more than just delivering analytics and checking the box. If we're not thinking about the people who are using our solutions, we're not going to be successful."

### Bridging social services with a new service delivery model

**M**ichigan's governor challenged its state agencies in 2015 to knock down the silos that divided social services providers and deliver a more person-focused experience to its residents, rather than a program-focused delivery model – one that would understand the whole person and what's holding them back from success.

The MI Bridges digital platform was developed to address these goals.



"Each program area is very focused on delivering excellent quality for what they're responsible for delivering."

—WARD BEAUCHAMP, GENERAL MANAGER,  
MICHIGAN'S DEPARTMENT OF TECHNOLOGY,  
MANAGEMENT AND BUDGET

It provides residents with access to more than 30,000 state and local resources such as food banks, shelters and childcare providers. Using MI Bridges, customers can explore resources offered by local community organizations, apply for benefits, report life changes, make case updates, or renew benefits – from a desktop or laptop device. They can access their own benefit information, letters and verifications sent from the Michigan Department of Health and Human Services directly from their profile, without having to contact a caseworker, and they can upload documents directly from

mobile devices to share with MDHHS. A pilot version of MI Bridges went live in 2017 with a phased statewide release completed by April 2018.

"We're hoping to have a fully integrated HHS platform, so someone in need of services is able to ultimately go to one place to get the services that they need," says Ward Beauchamp, general manager at Michigan's Department of Technology, Management and Budget. "We are taking incremental steps to get there."

The application for state benefits used to take an average of 40 minutes to complete. With the launch of MI Bridges, the average application

time was cut to just 17 minutes. More than 600,000 residents have registered as customer users of the site, and some 2,220 community partner users and 680 community partner organizations are registered in MI Bridges to partner with MDHHS to service Michigan residents.

"We took the approach of leveraging Salesforce (GovCloud) as a platform for service and an enterprise service bus to share information between legacy systems," says Judy Odett, business relationship manager. "That allowed us to take an integrated approach. It didn't require many changes to those legacy systems to deliver that modern view of delivering services."

The project team relied heavily on regular feedback from stakeholder focus groups in developing the platform. "Sometimes business or IT people think it makes sense, but when you get it out to the population, it doesn't make sense to them. Taking that extra step helped it be successful," Odett says. The agile



**"We're retiring all these link farms and websites and going to a central utility or service. That alignment of business processes has been invaluable. Other websites at the university can pull content from this repository."**

—REBECCA JOFFREY, IT INNOVATION OFFICER, CORNELL UNIVERSITY

process allowed for rapid improvements based on real-time feedback, resulting in a product that is truly collaborative, she adds.

Beauchamp recommends that organizations pursuing a similar path have established governance or a leader who is looking across the different program areas with an eye toward integration. "Each program area is very focused on delivering excellent quality for what they're responsible for delivering," he says. "It may be difficult for them to see how to integrate with other areas without a view that brings it all together."

## Enabling equal access in higher education

**C**ornell University believes that its 22,000 students should spend more time participating in opportunities outside the classroom and less time finding those opportunities. In the past, students would have to traverse multiple, siloed websites to find information on study abroad, research opportunities or specialized study programs.

"We invest a lot in these opportunities, and we want our students to have equal access to them, not just somebody who happens to hear

about it or someone who knows the network already," says Rebecca Joffrey, IT innovation officer at Cornell.

In February 2018, Cornell launched the [experience.cornell.edu](https://experience.cornell.edu) website, using a mix of content management and customer relationship management technologies to bring more than 600 opportunities to students' fingertips in one location.

The site presents suggestions and allows users to compare programs and "favorite" them. Students can refine their search by categories such as subject area, college or school, term and location, and then drill down to see additional details, such



as cost information and a summary of deadlines.

Cornell plans to use data gathered from the site to understand exactly who is applying for these opportunities and, more important, who is not.

"In a typical technology system, you can only see the population of people who do take part," Joffrey says. "But because we're doing this now in a CRM system, we have data for our entire student population, so we can understand where there are gaps in our ability to provide service, opportunity and access" and deliver opportunities in a more targeted way, she adds.

"Now we have a single place where our programs live," Joffrey says. "We're retiring all these link farms and websites and going to a central utility or service. That alignment of business processes has been invaluable. Other websites at the university can pull content from this repository."

The site has welcomed 26,000 visitors since the launch (41 percent are new visitors and 59 percent are returning visitors) and received

316,000 page views. Students from other universities who take part in Cornell programs, high school students and even the general public can use the site for some programs.

Technologies like these can be very beneficial to all higher education, Joffrey says. "There is a different class of technology out there than what higher ed institutions have used historically. We have relied on a lot of siloed solutions, or a business unit solves their entire business problem for a certain office. We now can use best-in-class tools to provide service."

## Increasing access to city government

**C**IO Ted Ross foresees a day when residents of Los Angeles will be able to make a verbal request through an Alexa or Google Home virtual assistant device to get a pot-hole filled or graffiti removed, or to order a new trash can. "You will be

able to interact with government through simple conversation in the comfort of your home," Ross says.

That capability may not be too far away, as the city's Information Technology Agency (ITA) has been working to increase access to city government. Its latest digitization ven-

work. Contracting with government is never easy, so Chip helps answer a wide variety of questions from how to register for new contracts to what is a federal NAICS code?

Because businesses often use off-hours to search for their next job opportunity, the city actively worked to find a way to be there for businesses when it



**"You will be able to interact with government through simple conversation in the comfort of your home."**

—TED ROSS, CIO, CITY OF LOS ANGELES INFORMATION TECHNOLOGY AGENCY

ture, a chatbot named Chip, the City Hall Internet Personality, has already helped answer questions from city contractors, police candidates and tax-paying businesses.

Chip was first introduced in March 2017 through an integration with the city's contracting opportunity portal, LA Business Assistance Virtual Net-

is convenient for businesses to interact with the city, Ross says.

"In our first 24 hours of launching Chip, we were receiving questions at 2 or 3 a.m.," he says. "We've seen a 60 percent reduction in questions that humans had to answer."

Chip has been integrated into several other websites and apps,

including the LA police department recruiting site, joinlapd.org. Chip answers more than 1,000 questions a month for the candidates navigating the complicated LAPD recruit process.

The bot uses automatic speech recognition (ASR) to convert speech to text and natural language understanding (NLU) to recognize the intent of the caller without requiring the caller to speak in specific phrases, which improve the success rate of self-service interactions. Chip can also detect the sentiment of the user, as well as communicate in more than 50 languages.

"We hooked him into a 'sentiment AI,' so we can tell when somebody is getting a little irritated in the responses back," says Joyce Edson, assistant general manager and deputy CIO at the Los Angeles ITA. "We found that [from listening to] a lot of the responses, that we trained Chip in government-ese and not really simple English – so we monitor those sentiments so that we can then target those particular knowledge articles



and make them more English-like."

"I really like the exercise it requires from my technical staff," Ross adds. "A chatbot has to be conversational and have strong communications skills, and traditionally technical staff don't necessarily come with those skills, so it requires us to make our content understandable and digestible, which ultimately makes us a better government."

## Theme park visitors gain express entry with facial recognition

**E**xcited visitors to Universal Studios Florida and Islands of Adventure in Orlando want to spend less time waiting in line and more time riding the attractions. In 2017, Universal Orlando Resort launched the Photo Validation system in the two theme parks, allowing guests with express access passes to skip the regular standby lines at attractions.

Photo Validation leverages innovative facial recognition technology in



## "Sometimes the 'simplest' assumptions for guest behavior are the most challenging to realize in actuality."

—AL CALLIER, VP, STRATEGIC INNOVATION, EMERGING TECHNOLOGY AND DEVELOPMENT, UNIVERSAL PARKS & RESORTS



a way never before used in a theme park to quickly and easily authenticate users of the Universal Express pass.

Typical facial recognition systems require specific lighting parameters and have slow, cumbersome interfaces not conducive for theme parks, which operate in a wide variety of lighting conditions. To develop a system that would meet performance needs, Universal Orlando worked collaboratively with a partner to advance facial recognition technology so that it works in virtually any lighting condition found at attraction queues – from bright Florida sunshine to complete darkness – and is optimized for speed and ease of use, day or night. This created a guest experience that doesn't feel invasive but is a useful part of the park experience.

The system is multifunctional, allowing for facial recognition and photo referencing, plus bar code, QR code and RFID scanning – all seamlessly, within a few seconds and with secure, encrypted templates, which allow for protection of data.

The system is practical and accommodates the natural behavior of simply looking toward a camera at each access checkpoint, a feature that proved challenging at first. "Sometimes the 'simplest' assumptions for guest behavior are the most challenging to realize in actuality," said Al Callier, vice president of strategic innovation, emerging technology and development, in a statement.

The team thought that guests would find it easy to scan their own ticket bar codes and align themselves

to the camera. However, through testing, it was determined that test subjects, and later actual guests, struggled to understand and consistently perform the aspect of scanning their tickets themselves and looking directly at the device. They also observed that families and parties often approached the recognition checkpoint as a group, not individually in a linear fashion. "We ultimately found guest self-scanning of ticket media was not ideal for scanning bar codes," Callier said. A team member with a scanning device was reincorporated into the process to assist with the transaction, "which is much faster," and floor markings were also installed to visually prompt guests to

stand at the ideal distance facing the camera unit.

Starting with a few attractions to help guests and team members acclimate to the new system, the technology quickly expanded to all top attractions with Express Pass access.

Today, the average processing time per transaction is less than 1 second per scan, which makes processing Express Pass guests faster than ever. Some 58 percent of guests view Photo Validation very positively or positively, and only a handful opt out of the experience.

"Using this technology to reference and validate a diverse and international population of guests in the theme park attraction queue setting had never been done before. Neither had the complex combination and marriage of software, hardware, construction, creativity and theming required," Callier said. ♦

Stacy Collett is a frequent contributor to CIO.

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# Analytics success starts with a center of excellence

**Data-driven organizations accelerate data transformation with an analytics COE.**

BY SERGE FINDLING AND MARTHA ROUNDS

**A**rtificial intelligence and data science offer great promise for delivering business value across the enterprise. IT organizations and lines of business units alike are rushing to make good on this potential, but AI and data science initiatives

can't be rushed. Yes, there are instances in which an individual with some expertise in data science grabs available data and surprises business leaders with answers to questions they hadn't thought to ask. But more often than not, this approach leads to misleading recommendations and wasted time.

According to a recent IDC survey of CIOs and senior IT executives, 93 percent of IT executives in the U.S. say their enterprise is leveraging some form of center of excellence (COE) to drive AI and data science initiatives. In many, if not most, cases, these COEs are small, nascent and experimental. In every case, they play an essential role.

How have companies created successful analytics COEs that propel measurable business outcomes?

## **Building a successful analytics COE**

Successful COEs focus on collaborating with the business. Philip Jenkins, director of Verizon's Analytics Center of Excellence, says Verizon's

COE was created because the IT department and business departments like marketing, finance and operations were all doing data work in an uncoordinated fashion. The center now acts as the hub in a hub-and-spoke model, with the spokes being data consumers in the business units. Jenkins says that, from the outset, the goal of the center has been “to make our data more powerful so that we can have better outcomes — what we call ‘simple, smart and connected experiences’ — with our customers, so that we don’t waste their time, we make more personalized offers, and whatever actions we take are more relevant to what’s important to them.”

It’s also critical for the COE to focus on strategic business priorities. Margery Connor, founding manager of Chevron’s Modeling and Analytics Center of Excellence, recommends setting up a prioritization system based on business value. Otherwise, “you get bombarded with all these ideas and some of them are higher

value, some of them are lower value,” she says. In fact, Chevron’s center is guided by an “enterprise data science steering committee,” with representatives from procurement, finance, business units, and the CIO and chief technology officer.

As a result, “we get to show them what we are working on, and they identify areas where we could be more opportunistic. To work on a project, we need a well-defined business problem, a reasonable data set and a [business] champion,” Connor says. “If you don’t have a vocal champion in the business, then, more than likely, even if you solve the problem, it won’t get implemented.”

### Best-in-class COEs

Analytics COEs support both business and IT. They enable a transformation from department to enterprise scope and from tactical to strategic. At the same time, they create a pathway for an operational transformation for enterprise-wide data quality, strong decision-making,

The COE is particularly **valuable** when the enterprise already has some isolated **learnings** and **successes** and wants to reach a more global scope.

ing, optimized value and business alignment. At their best, analytics COEs focus on enterprise-wide coordination; they thrive with both central and distributed resources. Because analytics expertise is scarce, the COE owns or creates a network of experts who can help anybody in the enterprise. The COE acts as an influencer node on a network of distributed experts or competency centers, bringing resources and connecting networks of people engaged in AI projects.

The COE is particularly valuable when the enterprise already has some isolated learnings and successes and wants to reach a more global scope. This COE will align, advise, support, communicate, educate, govern, architect and

standardize all aspects of enterprise data transformation.

Despite, or perhaps because of, the excitement about these technologies, AI and data science face an uphill battle. Data experts look like auditors, and sooner or later, a machine learning algorithm hits a land mine and gets somebody fired. However, a data-driven culture is not a “nice to have”; it’s essential for business success. For most enterprises, the analytics COE offers the best hope of achieving the promises of data science. ♦

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Serge Findling is VP of research with IDC’s IT Executive Programs. Martha Rounds is research director for IDC’s IT Executive Programs. IDC’s Mitch Betts also contributed to this article.



# Are you ready to be a disruptor?

**Technology leaders have an opportunity to be more influential and demonstrate the value and capabilities of their existing organizations. To do this, they'll need to get disruptive.**

BY KHALID KARK

**T**he **CDO title** is probably the most frequently used title other than CIO or CTO to describe an “evolved” technology executive. The “D” in the CDO means different things based on the needs and objectives of the organization and the scope of responsibilities. For example, the chief digital officer is often focused on leading digitization and customer engagement efforts, while the chief data



Rather than developing talent for years based on specific career paths or job competencies, **disruptive leaders are curating talent** by providing them with a breadth of experiences and training.

officer is responsible for managing and monetizing the vast array of data a company has collected and archived. My personal favorite is the chief disruption officer, responsible for disrupting existing processes and business models and for co-creating new business opportunities.

The emergence of these roles signals an opportunity for technology leaders to be more influential and demonstrate the value and capabilities of their existing organizations. Whether an enterprise has one or many executives leading corporate technology and digital initiatives can vary for a host of reasons, including business context and operating model, existing compe-

tency and skills, and other industry and competitive dynamics. For example, Deloitte's 2018 global CIO survey found that organizations with \$10 billion or more in revenue are more than twice as likely to have a chief digital officer as companies with revenues of \$1 billion or less in revenue. But what's more important is that, irrespective of title, the role of a technology leader today is often not merely managing the technology but also transforming organizational mindset and practices, reshaping the business, and enabling business innovation through technology — that is, being disruptive.

Two-thirds of the respondents to the global CIO survey expect the

primary responsibility for technology leaders in three years will be driving change and co-creating business solutions. As technology leaders embark on this journey, they will likely realize that new approaches are required if they are going to succeed. Here are three ways to take charge of disruption.

### Look ahead audaciously

Without a clear mandate for change and executive support, even the most disruptive leaders can fail. The global CIO survey found that on average, CIOs spend 18 percent of the technology budget on building new business capabilities. However, for organizations we call digital vanguards—those

with a clear business mandate—that percentage increases to about 25 percent. And they're looking ahead audaciously, anticipating that almost a third of their budgets will be spent on innovation in the next three years. This budget shift will likely require radical reinvention of technology capabilities and organization and operating models to support these investments.

### Take a new approach to talent

Rather than developing talent for years based on specific career paths or job competencies, disruptive leaders are curating talent by providing them with a breadth of experiences and training. They're creating fluid organizational structures and agile work environments and putting people in situations where they have to rapidly acquire knowledge and expertise. Finally, these leaders recognize that the best way to engage high performers can be to offer opportunities to continue to



## Without a clear mandate for change and executive support, **even the most disruptive leaders can fail.**

learn new skills. One CIO developed a three-year, multimillion-dollar reskilling program in which 80 percent of the current staff will go through some training. Recognizing this is not a one-time effort, he plans to offer every technology employee two weeks of training of their choice every year, even if it's not associated with their current work.

### Employ nonfinancial metrics

With the shift to agile teams, product mindset and minimum viable product, measures such as quality, velocity, customer experience and business value have become more important. These measures are hard to gather and quantify but are often great predictors of future trajectory and allow for quick

course corrections. Continuous measurement, transparency and customer orientation can keep the organization focused on ensuring progress against key nonfinancial metrics over time. One CIO created a menu of nonfinancial metrics for executive stakeholders and asked them to select those they would like to see consistently. The CIO was able to create a custom dashboard that allows each stakeholder to see real-time progress on these indicators. ♦

Khalid Kark is a managing director with the U.S. CIO Program at Deloitte LLP.

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