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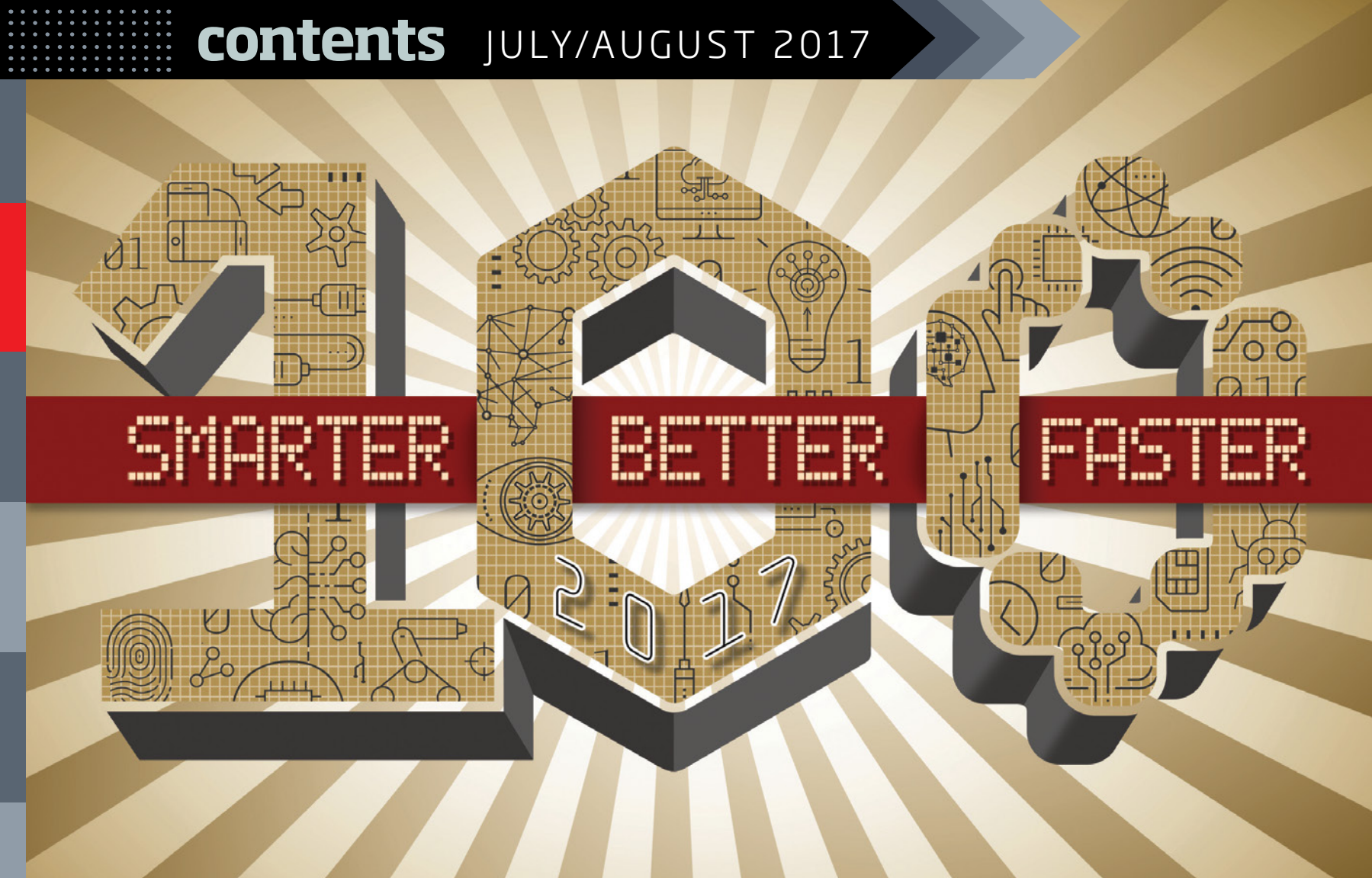
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HOW **CIO 100** HONOREES **DELIVER BUSINESS RESULTS** WITH AI & MACHINE LEARNING

BY BETH STACKPOLE





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cover story | **CIO 100**

AI gets down to business

New tools and troves of data have CIOs turning to **neural nets** and **machine learning** to deliver real-world results. Here's how six **2017 CIO 100 winners** put AI to work. **5**

BY BETH STACKPOLE

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Here's how
2017 CIO 100
honorees put
AI to work.

HOW **CIO 100** HONOREES **DELIVER BUSINESS RESULTS** WITH AI & MACHINE LEARNING

BY BETH STACKPOLE

LONG A STAPLE OF *sci-fi novels* and summer blockbuster movies, artificial intelligence and machine learning are fast becoming a dominant force in the enterprise, helping businesses across industries transform operations, revamp customer experiences, and carve out new revenue opportunities.

Already, many of the 2017 CIO 100 leaders are piloting AI and machine learning projects, taking a do-it-yourself approach to building predictive models and open platforms, working with consultants, or taking advantage of new AI-infused capabilities increasingly popping up in core enterprise systems like ERP and CRM. Across industries, the momentum is clearly building – International Data Corp. is forecasting worldwide revenue for cognitive and AI systems to climb to \$12.5 billion in 2017, a jump of 59.3 percent over 2016. Moving forward, IDC is anticipating spending on cognitive and AI solutions to enjoy steady enterprise investment, growing at a compound annual growth rate (CAGR) of 54.4 percent through 2020 when revenues will hit upwards of \$46 billion.

While AI isn't exactly a newcomer – it's been around for at least a couple of decades – the technology has taken off this year for a number of reasons: Relatively cheap access to cloud-based computing and storage horsepower;

unlimited troves of data; and new tools that make it more accessible for mere mortals, not just research scientists, to develop complex algorithms, notes David Schubmehl, research director for cognitive and AI systems at IDC. "All of this has created fertile conditions for AI to begin to flourish," he says.

In fact, Schubmehl says AI and cognitive systems are taking root in the

JUDGES

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banking and finance industry to do better fraud detection, in retail scenarios for personalization and product recommendations, and in manufacturing to do predictive maintenance. At the same time, AI is creeping into enterprise software platforms, where it is used to make recommendations for how to segment a marketing campaign, for example, or to automate back-office functions like software updates and network monitoring, freeing IT from time-consuming housekeeping tasks to focus on value-added activities. “AI is really about automation of automation,” he explains. “It’s really the idea that programs or applications can self-program to improve and learn and make recommendations and make predictions.”

Schubmehl says IT organizations have to start thinking about AI (if they aren’t already) and working with line of business to identify possible use cases and pilot projects. They should also be evaluating the software vendors they currently use to ensure that AI and cognitive capabilities are part of those vendors’ product roadmaps, he adds.

At the same, CIOs cast a critical eye on AI and cognitive capabilities, Schubmehl cautions. Data quality is a big issue as companies move forward, as is privacy, he says. For example, if you’re making predictions or recommendations to a customer based on bad data or information that should be safeguarded, you inevitably open up an organization to risk.

“You need to get on board, but you have to understand what the positive impacts will be on the organization as well as examine the risk potential and liabilities,” he explains. “Think about whether you need to have a data quality or integration initiative to make data better before you undertake AI practices. None of this should be done in a vacuum.”

Read ahead to learn how six 2017 CIO 100 leaders are transforming their enterprises to capitalize on AI and machine learning. >>>



Loretta Yearly

CIO
UNIVERSITY OF OKLAHOMA

CIO 100 WINNER

OU gets schooled TO BOLSTER STUDENT RETENTION

INCREASING THE STUDENT retention rate is always a holy grail for universities and colleges — one of the critical benchmarks upon which they are judged. With a mandate to hit a 92 percent freshman retention rate over the next few years, the University of Oklahoma decided to school itself in artificial intelligence, enlisting IBM’s Watson to learn a thing or two about its student population when it comes to happiness and success.

"This is not a new frontier for us, but **we need to blast it wide open** and use structured and unstructured data to better **personalize the student experience** on campus."

—GLENN HANSEN, OU, DIRECTOR OF BUSINESS ANALYTICS

Traditionally, the university relied on markers like SAT and ACT scores along with other structured data types, including high school GPA or math proficiency, to predict students at risk of dropping out. However, those data points didn't reflect the bigger picture, leaving OU to explore more innovative tactics — specifically, leveraging AI and machine learning to examine unstructured information such as student application essays as part of its retention analysis.

In partnership with IBM, OU's IT group and data science team combed through admission essays using Watson's sentiment analysis capabilities to identify any insights that might correlate to factors that

put students at risk. Their key finding: Students who expressed sadness in admission essays were much more likely to leave the university after freshman year, according to Glenn Hansen, OU's director of business analytics.

"We used Watson's open APIs to expose a lot of this unstructured data, which returned valuable information about students we wouldn't be able to glean from the essays if we were just reading them individually," Hansen explains. "This [process] functions at a higher level than humans are able to function, aggregating data across our students and allowing us to understand where there are patterns."



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With the information in hand, OU is now able to proactively identify — and more importantly, assist — students who might be struggling as opposed to hearing about problems after a student fails a class or drops out. In one such example, the university has

It's connecting the insights to action that poses one of the big challenges when deploying AI.

evolved its advisory services to include more life coaching on top of traditional class selection guidance, among other hands-on approaches, he says.

It's connecting the insights to action that poses one of the big challenges when deploying AI. "It's great to have knowledge, but without an actionable program

that interfaces with the students to make a difference, you really haven't accomplished anything," says Eddie Huetsch, associate vice president of technology advancement for OU. "Analytics are just a starting point."

Since it kicked off the IBM Watson retention initiative in early 2016, OU has seen its freshman retention rate climb from 86.1 per-

cent in the fall of 2015 to 90.4 percent a year later, and the university is well on its way to achieving its top-line retention goals. "It's always been about the value of algorithms, Hansen says. "This is not a new frontier for us, but we need to blast it wide open and use structured and unstructured data to better personalize the student experience on campus." ♦

NO JOY RIDE FOR *Wheels*

THE TEMPTATION WITH any cutting-edge technology, especially something as white-hot as machine learning and AI, is to run with something out of the gates and worry about the business impact later.

Not so for Wheels, a leading provider of fleet management solutions. Instead of playing around with experimental machine learning and AI-based projects, the company waited until it had a strategic business case to jump into the fray, leveraging the new technology to launch an adjacent service

to help companies better manage and control costs associated with personal vehicle reimbursement. "Instead of throwing up technology and then focusing on what's possible, you need to find a really good business problem to solve," explains Brian Chau, chief innovation officer for the company.



Brian Chau
CHIEF INNOVATION OFFICER
WHEELS

CIO 100 WINNER

For Wheels, that business problem had everything to do with the challenges many of its customers faced trying to effectively reimburse employees for use of personal vehicles on the job. While the bulk of Wheels' business involves managing corporate vehicle fleets, there was a growing sector of its

customer base (and potential new markets) that was routinely reimbursing employees for use of personal vehicles while also incurring risk due to the lack of oversight for insurance and maintenance. “The more we learned about reimbursement, the more we saw it wasn’t really being managed beyond cost and we felt there was an opportunity to play a role,” says Tim O’Hara, Wheels CIO. “We felt we could help customers manage more than the cost side, including the risk — not just to drivers, but to a company’s reputation.”

With the business case identified, Wheels set up a pseudo skunk works to dig into building the solution, which included using machine learning and pattern matching algorithms to create a ratings engine that queries market sources and proprietary fleet cost indexes to determine a fair reimbursement rate for drivers based on their location and other relevant factors. Typically,



Tim O'Hara

CIO

WHEELS

CIO 100 WINNER

firms use the IRS maximum rate to reimburse employees for personal vehicle use, which means they likely over pay and have no real way to maintain controls over what is being claimed for reimbursement, O’Hara says.

miles are properly documented or need further attention. In addition, a pattern matching algorithm defines fair market costs in each localized market for individual drivers based on ZIP codes and reflecting any market changes.

“Our unicorns are people who understand the business well enough to know what matters and **have the technical chops** to pull together all that’s necessary to get it done.”

—BRIAN CHAU, CHIEF INNOVATION OFFICER, WHEELS

With the Wheels Reimbursement solution, which launched as a product last year, an algorithm learns from driver mileage entries to determine whether business

There is also a mobile app that makes use of a phone’s GPS and accelerometer capabilities to help drivers keep IRS-compliant business trip logs.

The two AI-based algorithms were built using R language neural networks and leveraging proprietary Wheels data sources, such as fuel history from 300,000 drivers across the United States as well as vehicle maintenance history from over 500,000 managed vehicles. Market rates for insurance from every U.S. locality were

also factored in. While Wheels could have cobbled together a solution without using machine learning and AI, the process would have been much more complex and the results not nearly as effective, O'Brien says. "There's so much data complexity ... we need to make sure when drivers looked into the local markets, what they were seeing for reimbursement was equitable and fair," he explains.

While the AI-based system has already helped some customers significantly reduce reimbursement operating costs and opened up a new revenue stream for Wheels, the company is learning as it goes. One thing is certain — it's all about finding talent that can apply technology to solve real business problems.

"Our unicorns are people who understand the business well enough to know what matters and have the technical chops to pull together all that's necessary to get it done," Chau says. ♦



Michele D'Alessandro
VICE PRESIDENT AND CIO OF MANUFACTURING IT
MERCK

CIO 100 WINNER

Merck leaps to insight-driven business WITH HELP FROM MANTIS

Like many companies, Merck & Co. is staking its future on using data to drive innovation and competitive advantage. While there was no shortage of the raw resource, pinpointing the right data and spinning it into something that could actually benefit the business turned out to be a challenge.

"People have to learn to **view data as an asset** — not a throwaway."

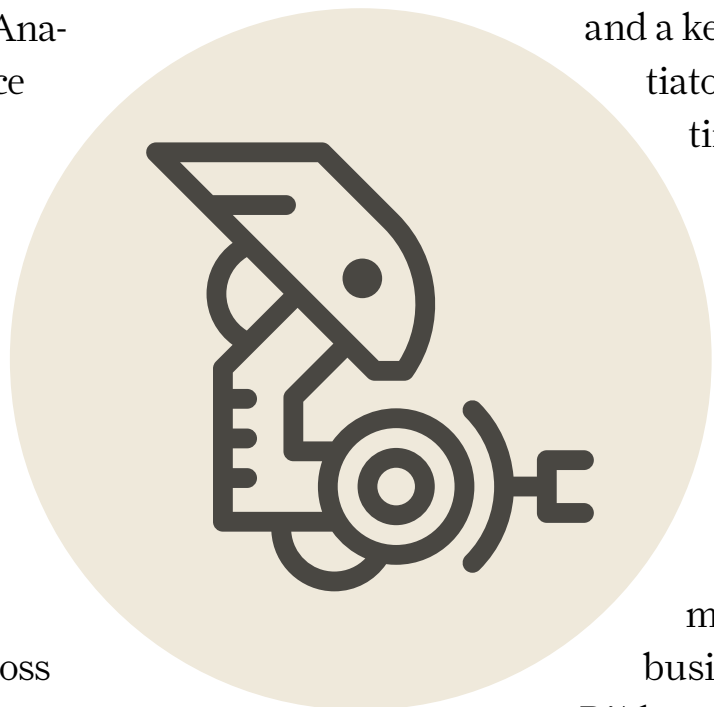
—MICHELE D'ALESSANDRO

Dozens, maybe even hundreds of Merck plant, laboratory, distribution and planning systems were continuously churning out copious volumes of data, but data scientists within the pharmaceutical maker's divisions struggled to gain access to what they needed to generate insights and create reports. Highly paid experts spent upwards of 60 percent of their time hunting down relevant data for analysis rather than parlaying those same man hours into actual data exploration and deep dive analytics, according to Michele D'Alessandro, vice president and CIO of manufacturing IT at Merck.

"We wanted to deliver online access to information that wasn't readily available, our hypothesis being that we have years of data we

can't see so we don't know what we can learn from it," D'Alessandro explains.

In late 2015, Merck set out to change that equation with the Manufacturing Analytical Intelligence (MANTIS) project, which leveraged modern-day data warehouse technology to bring the manufacturer's structured and unstructured data together across every part of its operation and to set Merck on a course to become an insights-driven business. MANTIS, built on a Hadoop architecture, creates a "data lake" of historical and real-time data across business locations, including internal transactional data, external supplier data and unstructured data like documents and email. MAN-



TIS serves up both harmonized data based on standard information models — customer orders, inventory levels, etc. — as well as non-harmonized or raw data, and a key differentiator is that it continually ingests previously unconnected and disparate data, eliminating the time and energy required to meet every business request, D'Alessandro explains.

"MANTIS has led to a significant uptake in our analytical prowess, providing a capability that was previously only available to a select few only after months of data mapping and interfacing and only available on narrow slices of business data," she says, adding that there is also a range of analyti-

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cal tools available in an enterprise app store based on user personas.

Today, Merck has seen a 45 percent decrease in the time and cost associated with analytics projects. Tomorrow, D'Alessandro expects

data insights to more people, there were definite cultural and organizational hurdles to get the user population to place a higher value on data. Training, companywide educational campaigns, and a for-

While the technology opened up data insights to more people, **there were definite cultural and organizational hurdles** to get the user population to place a higher value on data.

even greater results thanks to the addition of machine learning and AI capabilities that will deliver more predictive insights for everything from optimizing productivity to improving the performance of how the company produces drugs. “This is where MANTIS becomes really powerful from a competitive advantage standpoint,” D'Alessandro says.

While the technology opened up

mal data steward program are an essential foundation for making initiatives like this a success, she says, especially when introducing machine learning and AI, which makes a system smarter over time. “People have to learn to view data as an asset — not a throwaway,” she explains. “They need to be coached into treating data with the same persistence as any other viable asset in the company.” ♦



Tom Soderstrom and team
CHIEF OF TECHNOLOGY & INNOVATION FOR IT
JET PROPULSION LABORATORY

Left to right: Jim Rinaldi (CIO), Ricky Ma, Daanyaal Syed, Phu Kieu, Jeff Liu, Chris Mattman, Tom Soderstrom (Chief Technology and Innovation Officer)

CIO 100 WINNERS

DIGITAL ASSISTANT SUBS IN AS *JPL scientists' answer coach*

Is there life beyond Earth? What are the key trends related to radar between the time period of 1985 to 2017? What is the impact of light-years of travel on material properties and parts?

These are the kinds of impossible questions the scientists and engi-

neers at Jet Propulsion Laboratory spend countless hours researching,



sifting through petabytes of data, often manually, trying to unearth that elusive data point that could guide future space missions or aid in the quest to find life in space. At the same, JPL employees devote thousands of man hours searching for materials that will aid in continuous compliance audits and to prep for conference presentations, siphoning valuable time away from their big-picture research efforts.

“People are always trying to find answers, but data is in different locations and inadequately connected,” explains Tomas Soderstrom, chief of technology and innovation for IT at JPL. “There were long learning periods to dis-



cover what data existed and was relevant and once data was found, people didn’t always have access to it so they’d lose their momentum.”

As artificial intelligence and machine learning became more accessible, Soderstrom and team trained their sights on leveraging the technology to help find those needles in the haystack and make manual searches a thing of the past. Using emerging technologies like neural networks, machine learning, elastic search and graph databases, the JPL team created ADRE (Advanced Digital Research Explorer), a context-aware platform that would act as an automated digital assistant to



“With over 20 million unstructured and textual documents and an expected 1,000X increase in the amount of data collected in the next few years, meaningful manual data searches are impossible.”

—TOMAS SODERSTROM, CHIEF OF TECHNOLOGY AND INNOVATION, JPL

proactively crawl through JPL’s trove of unstructured and structured documents, along with video, images, databases and other data types, Soderstrom explains.

“With over 20 million unstructured and textual documents and

an expected 1,000X increase in the amount of data collected in the next few years, meaningful manual data searches are impossible,” Soderstrom explains.

ADRE, which was released last year, was created internally by the

JPL IT team using agile methods and open source tools like Docker and GitHub Enterprise. It was also designed with an API so it can be deployed in the background of any system and be leveraged with any user interface, from touch screens to smart glasses, Soderstrom says.

ulation pinpoint material they otherwise never would find, be more rigorous in meeting compliance and security standards, and save time doing laborious manual searches. Soderstrom's team is projecting \$2 million in cost savings over the next two years, attributed to reduced

"Finding the needles in the haystack is where the real power comes.

ADRE is like having an intelligent research assistant working on your behalf to help you make better decisions."

—TOMAS SODERSTROM

The JPL is continually working to evolve the capabilities, including its recent efforts to leverage speech technology to make the user experience even more intuitive, he adds.

With its new approach to discovering data, ADRE has already helped key segments of the JPL pop-

manual labor, the elimination of several commercial software licenses, and the benefits of reusing data.

"Finding the needles in the haystack is where the real power comes," he says. "ADRE is like having an intelligent research assistant working on your behalf to help you make better decisions." ♦

Das Chiranjoy

CIO

SIMPLE TIRE

CIO 100 WINNER

Simple Tire supercharges PREDICTIVE ANALYTICS

the dynamic duo of AI and predictive analytics packed a powerful punch helping Simple Tire reevaluate and reallocate its marketing spend. Yet another upside to the technology initiative was a vital repositioning of IT as a strategic partner to the business instead of a passive order taker and implementer.

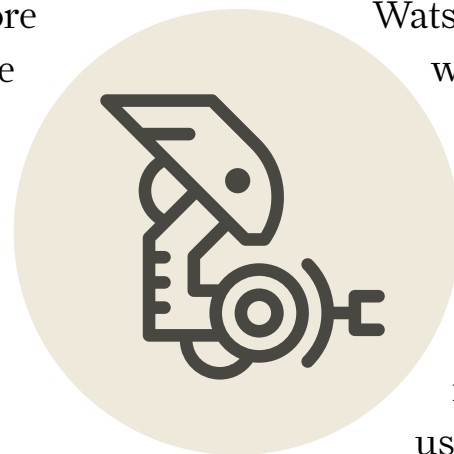
The idea for the AI-enabled business intelligence framework got its start serendipitously, after

meetings revealed marketing lacked an optimal way of evaluating how each of its channels

"We had the data – all we had to do was analyze it right and we could tell them what channels were doing well and what weren't. One of my goals was to **position IT as a driver for the business**, and this was a chance."

–DAS CHIRANJOY, CIO, SIMPLE TIRE

was delivering, according to Das Chiranjoy, Simple Tire's CIO. Sensing an opportunity for IT to help steer the business, the IT group launched a pilot to explore how advanced predictive analytics could help the business understand how best to allocate marketing dollars, determine which channels and campaigns were most useful, and predict which marketing lead sources turned up higher quality leads. "We had the data — all we had to do was analyze it right and we could tell them what channels were doing well and what weren't,"



he explains. "One of my goals was to position IT as a driver for the business, and this was a chance."

After experimenting with IBM Watson and Alchemy, along with a consulting gig with Gartner analysts, Chiranjoy wasn't satisfied with the results so the IT group set off to build the predictive models on their own using Azure Machine Learning and RapidMiner. The team collected data from various sources, including the CRM, ERP and Point of Sale (POS) systems as well as an ecommerce database that captures customer purchasing



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patterns, demographic information, and responses to marketing initiatives. Also added to the mix was non-structured data from various social media channels to shed additional light on customer sentiment and its impact on future buying behavior, he explains.

The project yielded insights that helped the marketing team iden-

“The continuous training and supervised learning of data built the foundation for on-going process improvement cycles to further improve our operational results,” he explains.

AI and machine learning were the game changer, Chiranjoy says, because the technologies allowed for a forward look as opposed to

“We used to look at data in the rear view mirror. **Now we can determine what will happen in the future** – these models not only tell us what happened, but what actions we should take going forward.” –DAS CHIRANJOY

tify which channels were resulting in better leads. Phase two of the project will leverage the predictive models to identify customers who are predisposed for repeat business, allowing the operations team to create and tailor targeted initiatives to the at-risk groups to boost retention, Chiranjoy says.

traditional analytics, which are mainly diagnostic reporting. “We used to look at data in the rear view mirror,” he says. “Now we can determine what will happen in the future — these models not only tell us what happened, but what actions we should take going forward.” ♦



Ken O'Brien

EXECUTIVE VICE PRESIDENT & CIO
RR DONNELLEY

CIO 100 WINNER

RR Donnelley throttles up FREIGHT COST ENGINE

In the ultra-competitive logistics industry, highly accurate and fast-turn quotes are the key to winning business. Yet for RR Donnelley, it wasn't always a slam-dunk to pull off timely estimates with any real precision as the number of variables made for a moving target.

Traditionally, the sales team would comb through historical data to come up with a quote, but the manual process was laborious

and sales reps would often hedge to cover all the possible variables, potentially undermining their ability to be cost competitive,

“It was ultimately about **letting go of the old methodology and letting data do the work**. The big challenge is the first success — once you have that, the door opens for everyone else to enjoy the benefits and utilize the toolset to achieve similar wins.”

—KEN O'BRIEN, EXECUTIVE VICE PRESIDENT AND CIO, RR DONNELLEY

says Ken O'Brien, RR Donnelley's executive vice president and CIO. “There are a lot of variables that go into the rate — gas prices, the cost of transportation, even things like the local weather and the political climate in a particular region,” he explains. “If you don't have a good feel for all of those variables then you have to hedge the rate. We wanted an ability to provide very accurate rates, very quickly so we could have a lot higher confidence in what we provide customers.”

That confidence came by way of a new freight rate engine model RR Donnelley developed using machine learning and cognitive computing capabilities. The freight

engine model, introduced in October 2016 after a year of development, melds historical data with real-time data to create a complex, multivariate model that projects seven days out to predict freight rates with a high degree of accuracy and reliability. The machine learning platform, coupled with the multivariate model created with the R programming language, learns and improves over time, resulting in a rate engine that delivers the speed and accuracy RR Donnelley was seeking, O'Brien says.

Specifically, the model generates instant quotes as compared to the previous 30-minute

manual bid process, and has proven to be 7.5 times more accurate than the industry average, he adds. “It's a significant advantage being able to give timely price quotes to our customers and that we're not pricing ourselves out because of this predictive capability,” O'Brien says.

While there were the usual technical obstacles along the way, the greatest challenge was more cultural, O'Brien says, moving the organization away from a reliance on experience and feeling to guide estimating and embracing a data-driven process. A tight collaboration between IT and line of business helped set those expecta-

tions and prepare the organization at large to fully trust and embrace artificial intelligence.

“It was ultimately about letting go of the old methodology and letting data do the work,” O'Brien says. “The big challenge is the first success — once you have that, the door opens for everyone else to enjoy the benefits and utilize the toolset to achieve similar wins.” ♦

Beth Stackpole is a regular contributor to CIO.



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THE WINNERS (continued)

Holyoke Medical Center

Humana, Inc.

IBM Research

Infosys, Ltd.

Intel Corp.

Jet Propulsion Laboratory

JLL

John Muir Health

Johns Hopkins Medicine
International

Kaiser Permanente

Key Bank

Korea Electric Power Corp.

Land O'Lakes, Inc.

Lannett Company, Inc.

Massachusetts Mutual Life
Insurance Company

Maven

Memorial Sloan Kettering Cancer
Center

Merck Manufacturing IT

Micron Technology

Ministry of Labour of Brazil

Monsanto

MRE Consulting, Ltd.

NewYork-Presbyterian

NorthShore University
HealthSystem

Owens Corning

Parsons Corp.

PITT OHIO

Plante Moran

Recursion Pharmaceuticals, Inc.

RR Donnelley

Samsung Electronics DS Division

Samsung Life Insurance - Customer
Product Channel

San Francisco International Airport

SATS Limited

Sedgwick

Service Benefit Plan Administrative
Service Corp.

Seven Lakes Technologies

Siemens AG

SimpleTire

Sprint

StubHub

Sunmark Federal Credit Union

Synchrony Financial

TGI FRIDAYS

The Clorox Company

The County of Los Angeles

Town of South Windsor, CT

Toyota Motor North America

Tractor Supply Company

TransUnion

Turner

United Airlines

University of Oklahoma

Vail Resorts, Inc.

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VMware

Wheels, Inc.

Whirlpool Corp.

World Bank Group

Xylem, Inc.

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HALL *of* FAME

BY CIO STAFF

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Using **data** to **harvest** a better grape

The venerable practice of winemaking is undergoing its own digital renaissance

BY BRENDAN MCGOWAN

The world's oldest winery is a cool, dry cave near the tiny village of Areni in southeast Armenia. In late 2010, researchers unearthed a host of vintner's tools there, dating back 6,000 years, a testament to the longevity of winemaking.

In our own century, the practice of winemaking is undergo-

ing a digital renaissance, led by such organizations as E. & J. Gallo Winery, the largest global exporter of California wine. CIO Sanjay Shringarpure, who joined E. & J. Gallo in 2014, is bullish on IT's ability to sustain business impact.

"What I started to realize after

the first year on the job was [that] the scale and scope of IT at the winery is vast," Shringarpure explains. "IT interacts directly with the business support applications, helping the engine of the company—our sales and marketing teams, as well as our wine-makers and our wine and grape

supply division—to make the wine."

As an agricultural concern, the wine industry is inherently cyclical. The brief harvest period, when time literally becomes money for California wineries, starts roughly in mid-June and extends until October in some regions. During

this “crush” time, grapes ripen and must be picked, shipped and crushed and any number of variables can impact yield and grape quality, from heat to precipitation levels to vine disease.

The “crush” is the basis for E. & J. Gallo’s revenues. Yet until 2014, Shringarpure explains, the crucial data underpinning the company’s harvest was manual, confined to Excel and isolated in disparate systems.

Introducing analytics

In such a brief harvest period, there are many stakeholders. At E. & J. Gallo, all of them demonstrated interest in unifying the essential grow data. On the corporate level, senior executives were keen to employ automation to think at the margin, repeatedly demonstrating a willingness to invest in long-term initiatives, including business intelligence (BI), mobilization and digital.

“Grower reps,” winery employ-

ees who work directly with external farmers, were interested in the potential supply chain efficiencies that a consolidated digital ecosystem could provide. And ultimately, of course, there are E. & J.

In our own century, **the practice of winemaking is undergoing a digital renaissance**, led by such organizations as E. & J. Gallo Winery, the largest global exporter of California wine.

Gallo’s external customers, who stood to benefit indirectly through a unified internal data environment—and, by extension, reduced product degradation and higher grape quality.

“What we focused on over the last three years was to create a mobile scheduling application that could be used in the fields,” Shringarpure says. “Imagine a grower rep going to a vineyard, tasting the grapes, and then right there on an

iPad, scheduling that from a supply chain perspective, as well as gathering field collection data on the characteristics of that grape, in a digital ecosystem that you’ve created in an iPad or an iPhone.”

The effort, Shringarpure explains, was based on three primary principles. First, the app needed to be a conduit for digital field data collection, a visualization tool that would create efficiencies in the data workflow. Second, it had to be mobile, freeing grower reps up from having to go back to the office after data collection. Finally, it had to complement and enhance current business processes, not distract

from them.

The application, which is distributed exclusively within E. & J. Gallo’s intranet as a “test and develop” iOS app, is naturally calendar-based. The user interface is based

on both seven- and 14-day cycles.

“The app allows you to say, ‘This sub-block in the vineyard gets picked now,’ or ‘This vineyard gets picked two days from now,’ based on the characteristics and development of the grapes,” Shringarpure explains.

The app’s data collection and integration functionality is being merged with internal geographic information systems (GIS). This will prove crucial in a grow-

ing environment like California, where a recent years-long drought was one of the most severe in the state's history, stretching across the Central Valley's 18,000 square miles from Redding to Bakersfield.

These disciplines serve him and his team well as they work on this ongoing project.

"From a motivation angle, it's huge for our team to see that they are not just providing technology

tions on business process, reframing technology's priorities to reflect the needs of the "grower reps" they served.

"It helped elevate the conversation away from 'IT is costing too

IT organization. IT, Shringarpure says, has become the "connective tissue" between different areas of E. & J. Gallo Winery, a multinational with upwards of 90 brands under its banner. IT's agility in rolling out a DocLink instance, for example, allowed sales representatives to forgo the massive binders, full of printed daily sales reports, that were literally dragging them down.

E. & J. Gallo's IT has driven and sustained a transformative vision of how data is collected and consumed. And it all started with an app.

"The grower reps, the folks who are using these tools, have said that this [app] has been a game changer for them in terms of productivity, in terms of being able to deliver value to the business," Shringarpure says. ♦

Brendan McGowan is global media bureau and client research manager at the CIO Executive Council.

"The grower reps, the folks who are using these tools, have said that **this [app] has been a game changer for them in terms of productivity**, in terms of being able to deliver value to the business."

—SANJAY SHRINGARPURE, CIO, E. & J. GALLO

"Using GIS technology to overlay satellite imagery, and to gain insights from that while we're mobile scheduling, that's where the progression of this initiative is going to be heading over the next two to three years," Shringarpure says.

Long-lasting impact

Shringarpure says that as a leader, he focuses on listening as well as continuous learning.

and hoping it'll be used," he says. "It's adding value to not just E. & J. Gallo, but also the broader community, as their grapes get picked on time, and there is less wastage. There are very few scheduling issues, and they are minimized. All of this is real."

His team stretched themselves, taking the time to study the picking process while analyzing the workflow from vineyard to crush pit. They had in-depth conversa-

much' or 'the IT investment that Gallo [makes] doesn't reflect the value," Shringarpure says. "This was a concrete way of showing the value on a continuous improvement basis rather than just being focused on, 'Hey, are my laptops working? Are my reports coming out on time? Is the phone system working?'"

This drive towards real-time, actionable data has sustained itself in different ways throughout the



10 GDPR myths debunked

Don't be fooled. GDPR implementation is a complex undertaking and being unprepared could have significant and expensive repercussions.

BY DUNCAN BROWN AND PETE LINDSTROM

On May 25, 2018, the European Union's (EU) General Data Protection Regulation (GDPR) will take effect throughout all European Union member states. GDPR is a new regulation by which the European Commission intends to strengthen and unify data protection for individuals whose data is managed by organizations within the EU and for

EU resident data worldwide.

In short, every country that does business in the EU must conform to GDPR standards. Many companies, particularly in the EU, are already well on their way to compliance. Others are only beginning to consider the consequences of GDPR; they face months of hurried efforts to align with GDPR requirements.

While GDPR has been widely pub-

licized and discussed, myths abound.

MYTH 1: GDPR is like Y2K

Some firms are tackling GDPR with the same hysteria prevalent during the Y2K millennium bug, approaching GDPR as a single project with a defined end date. But GDPR is not just a “point in time” activity. Also, many firms believe that phenomena like Y2K and now GDPR are overblown. But compliance with GDPR should be the default position for legitimate firms.

MYTH 2: No one will get fined

Some think the risks of heavy fines are over-exaggerated. But targeted enforcement is likely, and authorities may go after high-profile companies or companies with particularly egregious data processing faults. Assuming no one will get fined may pose high-impact risks.

MYTH 3: Everyone will get fined 4 percent

Certain factors — the types of data

affected, degree of negligence, a company’s prior infringements, and others — will affect fines. Two tiers of fines, either 2 percent or 4 percent based on the previous year’s revenues, will apply, depending on which rule has been infringed.

MYTH 4: Noncompliance is equivalent to a security breach

Compliance with all the GDPR’s fundamental personal data processing principles will be important. It is likely that some authorities will seek to send a message by imposing high fines on firms that infringe those or other principles, especially if they are doing so deliberately — even if a security breach is not involved.

MYTH 5: For security breaches, the fine is only 2 percent

“Controllers,” companies that determine the purposes and means of the processing of personal data, can receive higher-tier

It is likely that some **authorities will seek to send a message** by imposing high fines on firms that infringe those or other principles, especially if they are doing so deliberately – **even if a security breach is not involved.**

fines for security breaches. “Processors,” companies that process personal data, can receive lower-tier fines for security breaches, but can still be sued. Risks could be large if non-governmental organizations (NGOs) sue on behalf of numerous affected individuals.

MYTH 6: All security breaches must be reported within 72 hours

In fact, only personal data breaches will have to be reported, and reporting obligations will vary with a firm’s role as controller or processor. Controllers’ reporting

obligations and timing depend on the risk. Processors will have to notify their controllers of personal data breaches without delay.

MYTH 7: It will be safest not to report security breaches

Some firms may think that if they conceal security breaches from authorities, they will not get fined. This is untrue: they could be found out anyway, and could be fined for failing to report data breaches.

MYTH 8: To comply with GDPR, we should encrypt everything

GDPR requires companies to implement measures to ensure a level of security appropriate to the likelihood and severity of risks among individuals for every situation, including storage and transmission. Security measures should be risk-based depending on the available technology and the costs involved.

MYTH 9: Companies will be able to outsource GDPR liability for security to third parties

In fact, it will be critical to make sure that contracts sufficiently cover risks. Processors will want to carry out due diligence on both customers and subcontractors. Insurance merits investigation — not just cyber-insurance but also liability insurance, though regulatory fines may not be insurable.

MYTH 10: Data location is not a security issue

While data location may not be a technical security issue, it is one factor that may be relevant to over-

all security. Some firms may think that properly encrypted personal data may safely be stored outside the EU if they alone can access the keys. However, the geographic location of personal data is highly regulated under data protection laws as a legal compliance matter. Also, many EU regulators take the view that data location is a security issue.

In conclusion

GDPR implementation is a complex undertaking that demands a step-by-step approach based on a shared vision among an organization's IT department, legal department, line-of-business owners, and board-level executives. A lack of preparation for GDPR may bring significant, expensive and highly unwelcome repercussions. ♦

Duncan Brown is associate vice president, European Security Practice at IDC. Pete Lindstrom is vice president of research, Enterprise / NextGen Security at IDC.

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Talking tech in corporate boards

Tech leaders are commonly encouraged to speak the language of business, but it is becoming increasingly important for boards to speak the language of technology.

BY KHALID KARK

As technology becomes ubiquitous and digital transformations reinvent corporations and upend existing business models, corporate board members may be required to be technology fluent to navigate their organizations through these uncharted waters.

The spectrum of technology fluency ranges from having a basic understanding of technology,

including differentiating between tech “myth” and fact and understanding how technology drives that individual business, to having a working knowledge of how technology capabilities and their adjacencies can drive new revenue and open fresh opportunities in the near term.

While the percentage of public companies that have appointed

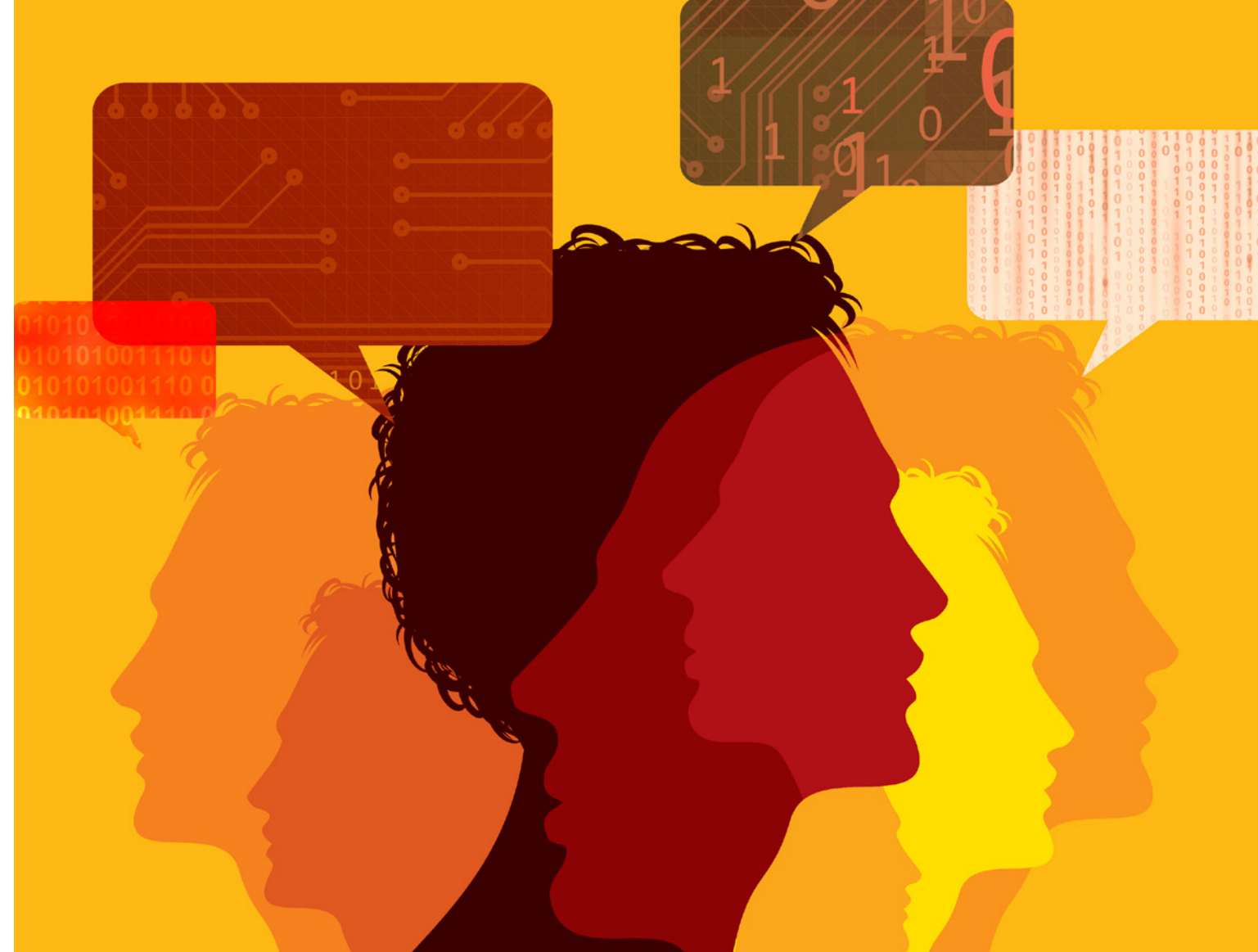
technology-focused board members has grown over the last six years from 10 percent to 17 percent, Deloitte’s latest research suggests that boards have a long way to go.

Here are five ways boards can be more technology fluent.

■ **Add tech fluency as a core competency for board seats.** In 2016, 44 percent of boards identified technology experience as being

on their wish list but only 3 percent of the companies hired a technologist. It’s about time boards include tech fluency as a core competency for a board position. Even a single board member with the requisite skills can be the conduit for other members to be more tech fluent.

■ **Help define an offensive technology agenda.** If you are not disrupting your marketplace, your



competition likely will. Many corporate leaders are realizing that technology has the potential to catapult or quickly disrupt business models. Many are developing bold technology agendas not just to drive efficiency or security but to generate direct shareholder value.

can help develop and endorse an overarching technology strategy.

■ **Engage with technology leaders for continuous learning.** Probing technology leaders for shifts and trends in technologies — especially those directly impacting or adjacent to their business — can

Boards can help CIOs ensure that IT projects are aligned with business needs, deliver shareholder value and have business executive buy-in. And being involved in defining and measuring outcomes for these initiatives can help boards hold both business and

Likewise, many CIOs and other C-level technologists are realizing that developing broader business skills positions them to help deliver technology's transformation potential to businesses at both the strategic and operational level. The alignment of boards and technologists can help businesses drive growth, increase competitive advantage and effectively manage risks.

“Many boards today still look like they did 20 years ago,” says a board leader. “It used to be good to have a bunch of CFOs in the room, but we are at a crossroads in corporate board structure. We need to get to the point where the majority of the board is tech-savvy.” ♦

Khalid Kark is a managing director with US CIO Program at Deloitte LLP. This publication contains general information only and Deloitte LLP and its subsidiaries (“Deloitte”) are not, by means of this publication, rendering business, financial, investment, or other professional advice or services.

Only 9 percent of corporate boards **have a technology sub-committee today**, but the number is increasing.

■ **Consider a technology committee.** Only 9 percent of corporate boards have a technology sub-committee today, but the number is increasing. This sub-committee can serve as the primary link between the board and the growing number of C-suite executives responsible for various aspects of technology (for example, the CIO, CTO, CISO, chief digital officer, chief data officer and chief marketing technology officer) and

allow board members to keep up to speed. This may mean that in addition to deliberating numbers and spreadsheets, board conversations will also need to focus on understanding the underlying technologies and their future trajectories.

■ **Get involved in business transformations.** Major IT projects involving business transformation efforts can be expensive and complex — and research suggests that many of them fail.

technology leadership accountable for results.

A competitive advantage

Technology still helps businesses “keep the lights on,” but it can also be a powerful force for driving business growth and performance. As a result, many corporate boards are beginning to rethink the function of technology in their organizations and are considering how they can create a more tech-savvy boardroom.