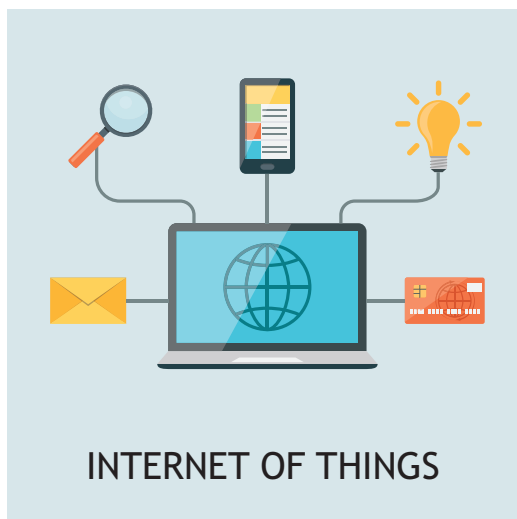


Information technology leaders talk business in 2017

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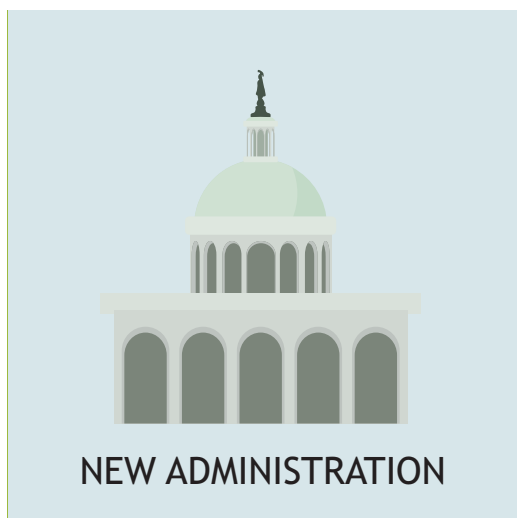
CLOUD COMPUTING



INTERNET OF THINGS



CYBERSECURITY



NEW ADMINISTRATION

Net neutrality. Cyber-security. Globalization. Today's CIO must stay equipped with far more than technical know-how in a world where social and political landscapes are increasingly important to planning a company's future.

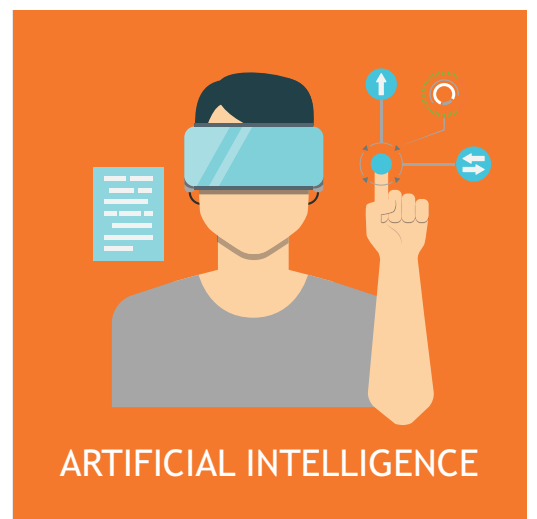
Traditionally, CIOs have led technology supporting the operations of an organization. With technology now front and center driving customer experience, new business models, and data driven enterprises, today's CIO plays at a new strategic level.

Potential policy changes come in an already complex climate of major technology trends including artificial intelligence, digital transformation, and talent shortages. These political issues are also tangible agents of change with very real implications affecting day-to-day business. In their expanding leadership roles, CIOs are now responding to these trends—a responsibility that lies firmly outside the domain of IT systems management and squarely within the area of business leadership.

In short, today's business leaders have a lot on their minds. To help them navigate their changing role in today's tumultuous business climate, the San Francisco Business Times and the Silicon Valley Business Journal held a roundtable featuring some of the field's top leaders at this year's 2017 CIO Awards—a night which celebrates the instrumental role information technology professionals play in their businesses. The panel's advice is reproduced on the following page.



DATA ANALYTICS



ARTIFICIAL INTELLIGENCE



TALENT GAP



SOFTWARE AND APPS

Responding to federal and international policy changes

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How are CIOs responding to the conversation surrounding immigration policy?

Chapman: One of the things that makes the Bay Area unique is that we are at the epicenter of technology, disruption, and innovation, and that's fueled by our ability to attract talent from all over the globe. We have diversity within teams, within companies, and within the region, and the thing that I'm most concerned about is how changes to immigration policy might affect that. I think our ability to attract some of the world's best and diverse talent has allowed Silicon Valley to create some of the most disruptive and innovative technologies.

Kumar: Frankly, there's an acknowledgment on a bipartisan basis that immigration reform done the right way would be one of the three or so levers that would actually cause the economy to grow faster. There's a lot of underlying angst about the economy not growing fast enough, "are we fulfilling potential?", etc. What we are seeing is that economic anxiety results in opinions on immigration that are clearly not pro-growth. Nevertheless, those feelings persist because of some of the stuff that's going on in the rest of the economy.

Cullivan: The tools and capabilities available today mean that there are opportunities to leverage forces around the globe. Employees don't all have to be in the Bay Area. Having said that, most of our energy needs to go into growing the talent base, because there's just not enough resources out there. Anything we can do to grow those resources ourselves is super important.

How are your companies working to attract and retain the best talent?

Chapman: I like to say that talent is global, but opportunity is not. Bridging the divide between talent and opportunity is something we all have the duty and the capability to do. Internally, the challenge we have in the Bay Area specifically—where it's hyper, hyper competitive—is creating an environment with the levels of autonomy, freedom, perks, etc., we need to remain competitive and retain people. We are a company that has a heavy millennial work force, and the new style of a worker today has completely different expectations from a worker of the last century, myself included. The challenge there is that the average tenure of the millennial employee is only about 18 months. Moreover, they will look for a new opportunity or a new assignment—whether that's internal, rotational or external—within three months of starting.



How do you predict the FCC will rule on net neutrality, and what should companies be watching closely?

Chapman: I actually don't think that revisiting net neutrality is a bad thing. I think that we should always be revisiting policies around how we govern. As we move toward mobile ubiquity and we gain access to an infinite global network economy, net neutrality—just like other policies—has to be revisited on a frequent basis to make sure that we're doing the right things. What may be generating some fear right now is that new people are coming into leadership and are revisiting something we have gotten accustomed to. We're worried that what we're accustomed to is going to be disrupted. I don't think that's necessarily a bad thing. I think the fear is, what is that disruption? What is that change? What does that mean to us? I think the fear of the unknown and lack of details drives us to predict a negative outcome. What I worry about when addressing something like net neutrality is that in trying to solve particular issues or concerns that are there today we end up actually breaking things that are working well. Hopefully we've got the right people that apply the right sort of pragmatism to the changes that will come. Hopefully we won't go too far to the right. Hopefully we'll catch it in the middle somewhere and strike a balance.

Kumar: This is sort of on a personal note, but the FCC chairman is a friend. He was appointed by Senator McConnell to the FCC. When I was working for Senator McConnell he was one of the two Republican commissioners at the FCC when Tom Wheeler was the chairman. And I will say this about him: He is a really thoughtful, sensible guy who is willing to listen to arguments on both

sides and make a judgment on the merits of the case. He comes from Republican senate lineage, so it will be easy to pigeonhole him as just a Republican crusader, but that's not who he is. He has really gone out of his way to try to define himself and to not allow himself to be categorized based on the party identification label that sits after his name. He and Michael O'Reilly, who is the other FCC commissioner, are guys that will actually listen to your concerns. They may not agree with you at the end of the day, but they will give a fair hearing and make a judgment on the merits, not on ideology.

How might net neutrality impact IT infrastructure?

Chapman: I suggest we turn that question around a little bit. We are talking about net neutrality and how the new administration may be taking a fresh look at policies in place today. But we've been dealing

with this type of challenge with other countries for many years. Doing business with countries like Germany, countries with economic protections that challenge the way our services work, and having to figure out how to implement those services differently, has taught us how to work with different kinds of restrictions. I think that potential change in net neutrality policy shouldn't be seen as anything different from that. I think that the challenges we face from delivering services globally, and working with some of the more complex countries that are out there, has actually forced us to get better at what we do. So, we focus a little bit on what we might be doing here internally—within the United States—but I think that anybody who is delivering services on a global scale has actually been dealing with this for quite some time.

What major policy changes worldwide are you watching closely?

Cullivan: I have some angst about GDPR. That's not because we haven't always needed to worry about data privacy and that we always haven't had to be compliant. Certainly when I was at Fire-Eye, customer data was of the utmost importance and the level of detailed conversation we had with customers about what was really happening with their data was unbelievable. But now there's this whole internal IT side of the equation, and you've got to really look at your internal infrastructure. Residency issues are now a much bigger problem because of the cloud. The huge value that came with implementing a global cloud solution was that your data was sitting in one place, which would allow you to really unleash the power of all that data. Now, some of the proposed solutions from some of the cloud providers is to essentially

go back to pre-cloud days. What I worry about with this one is actually very similar to my worry about security: it could become the “IT problem.” I do worry that when this really starts moving and people start waking up and saying, “oh, my gosh, are we ready for this?” they’ll claim that it’s an IT problem, when it’s really not. It’s about understanding every bit of data in your organization and categorizing it, as well as understanding exactly how the flows of data work. This is not a technology problem per se.

What are you watching for in the current administration in terms of cybersecurity?

Cullivan: I’m excited. Certainly, this isn’t the first administration to say that cybersecurity is super important. But I think what could happen is the administration starting to encourage companies to take on some of these frameworks that have been built, like MIST. Making companies as secure as possible has become a board-level issue, but there are still big gaps in many security programs that are out there. So anything that encourages firms to institute better security, with investment from the board-down, is a positive development. And I don’t just mean technology investments. I mean all the other investments that you need to make to have a world-class security program. People understand that cybersecurity is a problem, but they are not necessarily implementing all the things that they need to implement programmatically.

What changes in tax policy are being considered at the federal level?

Kumar: I spend most of my time thinking about the changing federal tax landscape, and there are two or three big takeaways that I would focus on. I spent most of yesterday on Capitol Hill in the White House talking to tax policy professionals. They are really committed to getting something done, and if not by the end of 2017, then by early 2018. There’s a reality that would be easy to miss from a distance because you could easily look at what’s going on in Washington DC and say, “it’s all Comey” or “it’s all Russia.” And that’s what attracts a lot of attention and is interesting to a lot of people. It feels like a slow-moving train wreck. Behind the scenes, though, the tax policy professionals are actually working and making progress. They’re kind of enjoying being under the radar screen so that they can get stuff done without being the focus of the press. So, they’re committed, and—as of yesterday—they’re feeling pretty hopeful about the chance of getting something done. What does that something look like? An obvious one is lowering the US corporate tax rate. The ideal goal is 20%, but realistically they’re going for 22% or 23%. Either way, it’s way down from where we are today. They’re also trying to modernize the international tax system. We have an outdated system of taxing income. US headquartered companies, we tax. If you are a US company, we have the right to tax your income no matter where you earn it. We are the only G7 country that does that and one of the few in the developed world. But it puts us at a disadvantage because it puts a lot of pressure on companies, especially companies with growth overseas, to consider moving their

intellectual properties overseas or even moving themselves overseas. Finally, there’s attempts being made to make changes on the individual side. But lower individual rates and lower capital dividends will come at a cost—the repeal of the deduction for state and local income tax. So, on the business side, it’s lower corporate rate, modernized international system. There will be some pain associated with all that, of course. But tax policymakers are reasonably optimistic, and I think that reason for optimism is that it should make the US a more competitive place to headquarter and grow a company, even if you have substantial income around overseas from global customers.

Cullivan: It will be interesting to see, if this actually make it all the way through, what companies choose to do with that extra cash. I think there is the potential to see more consolidation acquisitions once companies have that ability to leverage that cash. That could be a good thing as a CIO—or it might be a bad thing, depending on what it means for the partnerships and the relationships that you have.

Kumar: Say you’ve got a target that’s overseas. You are US headquartered. Right now, though, your foreign competitor for that target would have a tax advantage. The goal—and we’ll see if they are successful—is to try to level that playing field so that US companies have a better shot at winning those bidding wars because they don’t have to carry an additional tax burden across the finish line.

Chapman: The wisdom of the community prevails, and I think that when we know where things are starting to land, we as organizations will adapt. We will look where there’s a technology intersection to enable a better or different outcome.

What is your most important piece of advice right now for all of your fellow CIOs gathered here?

Chapman: The pain of change is mandatory, it is the suffering that is optional.

Cullivan: Always be prepared.

Kumar: There are changes happening in Washington DC, and it would behoove you to pay attention. Don’t ignore it. If you ignore it, it will not ignore you. Pay attention and organize yourselves to have your voices be heard. There are trade associations that do that, but pay attention to what they are saying because your voices do matter. You are not always going to win, but you will be heard. And that’s the one piece of advice that I would give.



Panel comments have been edited for conciseness and clarity.

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MEET THE PANELISTS



ROHIT KUMAR

Tax Policy Services Leader and Principal PwC

Rohit Kumar is a principal and leader of PwC’s Tax Policy Services practice within the Washington National Tax Services practice. In his role, Rohit advises clients on all aspects of domestic policy including tax policy.



JULIE CULLIVAN

SVP, Business Operations and CIO ForeScout Technologies Inc.

Julie Cullivan was formerly the Chief Information Officer and Executive Vice President of Business Operations at FireEye where she led all aspects of IT services including business application services, infrastructure services and delivery, lab operations services, and information security & risk management.



PAUL CHAPMAN

Chief Information Officer Box

Paul Chapman is responsible for leading the company’s global information technology strategy. He brings a unique view of IT innovation, and leads the development and delivery of key IT initiatives to support the company’s growing workforce and customer base.

What is the most important priority in the coming months in your role as CIO?

Business leaders sound off on trends affecting the CIO role

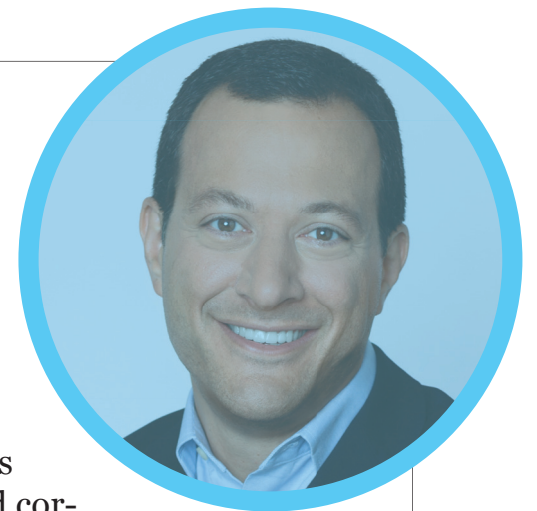
We sat down with the winners of the 2017 San Francisco Business Times and the Silicon Valley Business Journal CIO Awards to get their perspectives on the changing technology landscape and how organizations need to adapt to stay ahead of the curve. Here's what they have to say.



“As CIO, my top priorities over the next 12 months are: Continuing to provide IT solutions that support business transformation, maintaining information security, increasing capacity to support growing online transactions, and improving our speed to market in delivering new capabilities.”

DICK DANIELS, EVP & CIO, KAISER PERMANENTE

“Learning and innovation. Our technology team is here to differentiate BAL in the market, enable new growth opportunities, and redefine the way we work before new entrants “disrupt” us. Law firms can be laggards when it comes to technology, so we measure ourselves against our tech sector neighbors. That means investing in new ideas, continuously deploying great products, and leveraging our talent and the ecosystem of partners in the Bay Area. As the leading technology-enabled corporate immigration firm, BAL led with mobile apps, brought AI and robotic task automation to the practice, and is the first firm in our industry to incorporate both computer vision and natural language processing in the legal supply chain. We are poised to bring the “next big thing” to bear to benefit our clients. A culture of learning and innovation fuels that journey, and we’re excited to share how we can help drive value to their organizations.”



VINCE DIMASCIO, CIO, BAL LLP

46% of business leaders are investing in a security strategy for the Internet of Things over the next 12 months

Source: PwC's Global State of Information Security® Survey 2017

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“We’re building an enduring culture around measurement and improvement at Periscope Data. As Periscope Data continues to scale, we must also evolve our internal processes. It’s not enough to just keep up with the growth; we need to enable the business to take on new, more complex projects than were previously possible. That’s why we’re investing heavily in both the customer-facing and run-the-business teams and technologies.”

TOM O’NEILL, CO-FOUNDER & CTO, PERISCOPE DATA



“My focus is on supporting John Muir Health’s transformation and innovation initiatives that will continue to improve our community’s health and healthcare affordability. I am also focused on our patient’s data security and how we can ensure that information stays secure. Additionally, it is essential that I continue to transition IT resources to be business partners and information experts which will in turn drive the return on investment that John Muir Health makes in technology annually.”

JON RUSSELL, SVP & CIO, JOHN MUIR HEALTH



“My job consists of building a thriving and empowered team, setting a vision and strategy and then communicating that vision over and over again. I have an amazing team and we’ve recently brought on an amazing new CEO, Jeff Maggioncalda. My job is working with him to set a vision and strategy for 2018 and then work with my product team to execute upon that strategy. More specifically, a large portion of my team is focused on launching and iterating on learning paths, a personalized series of courses to help learners achieve their career goals. We believe this is critical not just for individual learners as they sift through our catalog of 2,100+ courses, but also for enterprises so that each employee can receive a plan specific to where they need to learn to further their companies’ goals.”

TOM WILLERER, CHIEF PRODUCT OFFICER, COURSERA



Why CIOs should invest in ARTIFICIAL INTELLIGENCE

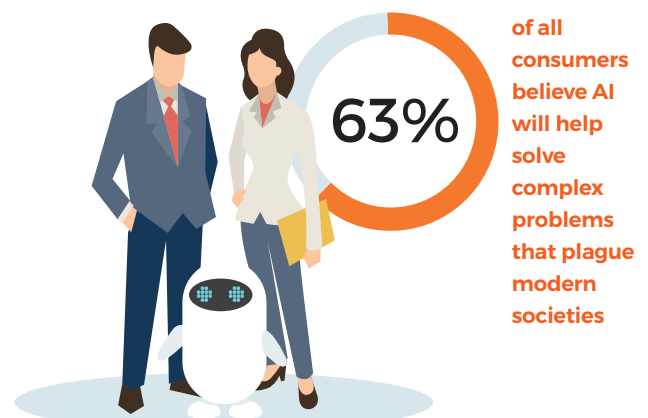
The data is in on Artificial Intelligence, and despite how Hollywood directors may feel about it, most Americans see artificial intelligence in a positive light according to a new consumer intelligence report by PwC. When PwC researchers asked technology and business leaders how they view the future of AI, 63% agreed that AI will help solve complex problems that plague our society and 59% believe it will help people live more fulfilling lives.

Of course, that's not to say that they don't see any potential problems with AI. In particular, respondents had some qualms about the effect of machine driven processes on the employment market. But when the study asked consumers to compare how much they value the existence of specific jobs to how much they value the sort of public good that AI might help us achieve, the results are clear: AI wins. 69% of consumers, for instance, said it's more important to have access to more affordable and reliable transportation than it is to preserve the jobs of taxi drivers. The numbers were similar for customer service representatives (64%), and even higher for attorneys (80%).

These comparisons prefigure the sorts of existential questions that AI (and its related technology, machine learning) will ultimately force us to ask. As technological advancements continue to be made, we will have no choice but to address and test our values head-on. Take a work of art, for instance, or a piece of literature. PwC's report found that while the majority of consumers believe it's likely that within the next 10 years AI will pen a Billboard Top 100 hit or write a hit TV show, those same consumers don't believe that AI will author a New York Times best seller, direct an Oscar-winning film, or win the Pulitzer Prize for journalism.

AI and IoT working together

Businesses across the world are moving rapidly to connect their products and equipment to the Internet-of-Things, opening up opportunities to create new business models and transform how they run their operations and engage with customers. However, tapping into the IoT is only part of the story. For companies to realize the full benefits of IoT enablement, they need to combine IoT with rapidly-advancing Artificial Intelligence technologies, which enable 'smart machines' to simulate intelligent behavior and take well-



Source: A Revolutionary Partnership: How AI is Pushing Man and Machine Closer Together (PwC)

Whether or not these predictions are ultimately realized, they provide a glimpse into what our society finds valuable, and—as you might expect—it's not busywork. Even if AI does eventually learn how to write plays on par with the Shakespearean tragedies, it is unlikely that consumers would value them like they would works penned by humans. That might, in turn, explain why it's the possibility of more time for creative pursuits and other forms of fulfilling work that really excites consumers about AI.

Consumers may be ready for AI, but we also need to ask what CIOs can do to prepare for the AI future and capitalize on its potential? PwC recommends that CIOs coach and collaborate with AI enabled machines, embrace learning and perspectives within their businesses and communities, harness data to help fuel AI solutions, and look for opportunities where AI can make a difference, starting with human workflow.

AI as a true change agent is coming. An open mind will be a CIO's biggest asset in the near future, as the technology advances and we continue to experiment with how to use AI to solve problems. Those who think practically and critically will ride the waves of these advancements instead of being left behind.

informed decisions with little or no human intervention. Over the coming years, ongoing advances in AI will have profound impacts on jobs, skills and HR strategies in virtually every industry—underlining the fact that companies don't have the luxury of time as they map out their plans for an AI-enabled world. Already, integrating AI into IoT networks is becoming a prerequisite for success in today's IoT-based digital ecosystems. So businesses must move rapidly to identify how they'll drive value from combining AI and IoT—or face playing catch-up in years to come.

