

Forbesinsights

2,000 Days:

A Road Map For
The CIO Of 2025

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In five years' time, CIOs will have new responsibilities in the C-suite and across the enterprise, extending their strategic influence over product development, marketing, human resources, the supply chain and more.

They will be challenged to discover new ways of generating revenue and introduce artificial intelligence and machine learning capabilities that create unparalleled efficiencies.

To help their companies thrive in the new environment and ensure their own success in the next 2,000 days, CIOs will have to clear a number of hurdles. They will need to reexamine their leadership skills, delving into every aspect of the business to better guide strategy and communicate their vision to others. They will need to attract increasingly scarce talent to swiftly take advantage of emerging technologies in the face of intense rivalry from startups, as well as from established competitors. And they will need to deftly manage the immense cultural changes new technologies will bring to their organizations, encouraging employees to learn the new skills they will need to survive.

These are some of the key findings emerging from a global Forbes Insights survey, conducted in

partnership with VMware, of more than 650 CIOs in North America, Europe and the Asia-Pacific region (including Japan). The survey covered a broad range of industries, including financial services, healthcare, government, manufacturing, retail and telecommunications. The surveyed CIOs were from organizations with annual revenue of \$1 billion or more; 16% were from firms with \$10 billion or more in revenue.

To help CIOs navigate the rocky path ahead, we have developed a road map with six dimensions for them to consider. These dimensions reflect critical capabilities that CIOs will have to acquire in order to excel in 2025.

KEY CHALLENGES FOR CIOs:

- Reexamine leadership skills
- Delve into every aspect of the business
- Attract scarce talent in a tight market
- Manage tech-driven cultural changes
- Prompt employees to learn crucial new skills

DIMENSION 1

Become A More Effective Business Leader

In the Forbes Insights survey, the single most important step CIOs said they need to take to ensure success is to “transform themselves into better leaders.”

To do that, they will need to become better strategists, immersing themselves in every facet of the enterprise and gaining a deep understanding of the challenges both the organization as a whole and its individual business units face.

Become A More Effective Business Leader

“First and foremost, CIOs need to develop an understanding of their business, the market conditions and their industry,” says Shankar Arumugavelu, senior vice president and global CIO of Verizon Wireless. “Once they do that, they need to become very adept in communication and leadership, motivating and inspiring the teams.”

Technology leaders must be strong collaborators, working closely with other leaders to develop new data-driven products and more efficient business processes. They will also need to be flexible, helping workers adapt to the rapid changes new technology will bring. And they will need to learn quickly: In five years, 66% of CIOs expect to be key decision-makers for corporate strategy, the survey found.

As CIOs assume more responsibility for revenue generation and product development, they will be at the very center of the business. Forward thinkers will embrace the role, finding ways to boost enterprise efficiency and gain insights about customers from new sources and by leveraging emerging technologies.

“My role has become more important and exciting,” says Shivani

Saini, CIO of Asia-Pacific consumer healthcare for GlaxoSmithKline. “I’m responsible for providing the company, our employees and our consumers with new insights. Through the capabilities we build with business intelligence and reporting analytics, we learn to understand our customers better.”

CIOs must also become more flexible, adapting their strategies as the technology they introduce transforms the organization. They will be responsible for creating new business models and speeding to market data-driven products that respond to changing customer needs.

“If you’re not reinventing the role every couple of years, you’re not keeping up,” says Sarah Haywood, chief technology officer and vice president of technology for Denmark-based beer manufacturer Carlsberg Group. “We have to fundamentally change the way we work and collaborate, the way we use the supply chain and innovate to develop new products. We need to change the wiring and design of the company.”

In 2025,
66%
 of CIOs expect to be key decision-makers for corporate strategy.

What Forward-Thinking Leaders Have In Common

Forbes Insights discovered several characteristics common to CIOs who could be identified as “forward thinkers”—those who are currently responsible for revenue generation and are achieving more success than others with DevOps and cloud and infrastructure deployment.

These leaders are more likely than other CIOs to say that using customer data to take on direct management of customer relationships will become one of their primary responsibilities. They are also demanding greater influence over product design and bigger IT budgets. If they’re going to be held accountable for revenue goals, they need more say in the products their company offers.

Focused on the big picture, forward thinkers are more bothered than others by staffers who can’t think strategically.

Regulators who don’t understand the world of IT and senior executives who believe IT can fix anything are persistent pain points.

Forward thinkers also see the talent gap through a different lens. While other CIOs look to outsourcing as the solution, forward thinkers take a broader view, offering current staffers more appealing career paths and more opportunities for flexible and remote work. They’re also accelerating their recruiting—which will put them even further ahead of their peers by 2025.

Forward thinkers believe that the following are the culture changes most important to IT professionals: to become more innovative, to increase partnerships within the business, and to collaborate more, both with their own staffers and the business lines they work with. Clearly, these are key ingredients for success.

These leaders are demanding greater influence over product design and bigger IT budgets.

Drive Organizational Strategy With Technology

CIOs are hyperaware of technology's importance to corporate strategy, but other business leaders are focused on their piece of the organizational pie and often lose sight of the connection. When CIOs were asked about the single greatest challenge they will face as they transform their organizations in coming years, the top answer was "lack of cooperation from employees," followed by "keeping the company moving toward a strategic vision."

CIOs' top challenges are **gaining employee buy-in and adhering to the strategic vision.**

CASE STUDY 1

Marrying Technology And Strategy At A Global Bank

In a sweeping organizational transformation designed to unify technology and business development, DBS Bank has created 33 software platforms for its business units, designating a business-line leader and a technology specialist to lead each.

Each business unit is responsible for developing goals it can accomplish with the technology platform, such as revenue generation, customer acquisition, digital customer onboarding or customer satisfaction. “It’s like 33 mini-businesses operating within DBS,” says David Gledhill, until recently CIO and group head of technology and operations, DBS Bank.

The program started two years ago and will roll out to additional business units over the next year. The bank provides money to the units for achieving specific goals with technology, and judges them based on their success.

“It’s almost like putting VC investments into a fintech startup,” Gledhill says.

In addition to developing one-, two- and three-year goals, each platform team is asked to create a long-term vision for the future, anticipating needs and examining how to incorporate disruptive new technologies. “We want them to look further out to see how the platforms will shape the future of banking,” Gledhill says.

This represents quite a leap for staff who formerly worked under one-year plans that weren’t always technology-driven.

“It’s a very fundamental shift. Businesspeople have a much greater role in owning responsibility for technology,” Gledhill says. Some people love the new responsibility that this shift entails

and others feel daunted by it. The bank provides training and coaches to help staff adjust.

To create a master plan for the future, the bank holds meetings in which all platform leaders share their long-term visions, with the CEO and the executive team sitting in. “It helps us align ourselves on a multiyear road map for the company,” Gledhill says.

CASE STUDY 2

Uniting Wildly Diverse Stakeholders In The U.S. Federal Government

Implementing new systems can be tough at large organizations, where departments have different needs and aren't at the same stage of technological development. Perhaps no one understands these challenges better than Suzette Kent, the federal CIO for the U.S. government. Kent is responsible for tech development and policy across all federal agencies and for performance evaluation and metrics, determining how well agencies are delivering on White House policy objectives.

"The president's management agenda has laid out objectives for IT modernization, improving data accountability and transparency, and creating a workforce for the 21st century. My role is to empower agency CIOs to do that," Kent says.

But doing so can be tricky when some agencies possess sophisticated AI and Internet of Things (IoT) applications while others are still using Cobol or paper-based systems. Kent strongly encourages

collaboration, which CIOs in the Forbes Insights survey say is essential. In addition to meeting with agency leaders and citizen groups who use government technology, Kent chairs the Federal CIO Council, which brings together technology representatives from every agency to prioritize problems and ensure that agendas are in line with White House strategy.

Like a private CIO, Kent must make a strong case to the boss—in this case, the U.S. Congress. "I have to communicate clearly to Congress why we think our technology, spending and timeline decisions are the best fit for our constituencies," she says. If she can demonstrate critical need, agencies can obtain funding quickly through a technology modernization fund.

To implement advanced technologies, Kent and the CIOs she oversees rely heavily on vendors. In the Forbes Insights survey, government-sector CIOs selected "having an effective deployment strategy using a partner's or

vendor's professional services" as the most important key to success in introducing new technology.

"We look to vendors to provide training as we make large-scale changes," Kent says. "Vendors understand how to build algorithms and do data inspection and modeling when we implement RPA [robotic process automation] and AI. Vendors are critical not only for providing a suite of products and services, but for supporting learning during the transition."

Finally, Kent measures results—and allows taxpayers to do the same. "We're holding agencies accountable and making results available to the public," she says. Citizens can view strategic plans and progress reports for most agencies on a [government website](#).

Introduce Cutting-Edge Technologies

Over the next five years, enterprise CIOs will roll out cutting-edge data-driven technologies, with AI leading the way. In the survey, over 60% said AI and machine learning would be very important or critical to their business by 2025. Over half said the same of IoT, edge computing and blockchain.

Over 60% of CIOs say AI and machine learning will be critical to their business by 2025.

CIOs can use AI and machine learning to dramatically improve efficiency throughout the organization. Such technology can automate back-office processes (via RPA), lower equipment repair costs (via predictive maintenance) and optimize supply chain routes. It can also boost business results by improving the customer experience—for example, by

developing responsive chatbots and offering buyers customized, analytics-based product recommendations. In an environment where [mobile commerce](#) already accounts for over half of sales in many countries, they can develop new mobile apps for their customers, connecting them to other apps to add services like mapping and delivery.

The markets for robotics and AI are growing fast. Forecasts indicate that the worldwide AI market will be worth [\\$59 billion by 2025](#), whereas it was a mere \$1.8 billion in 2016. To remain competitive, grow the business and take advantage of new opportunities, CIOs must deploy emerging technology solutions quickly.

What does successful implementation look like? Here are a couple of examples from forward-thinking companies.

CASE STUDY 3

A Manufacturer Experiments With IoT And AI

Danish brewer Carlsberg Group's customer base consists of the bar owners who serve its beer. Because they have high staff turnover, they must constantly train new workers to manage products and equipment, and sometimes struggle to maintain quality, Haywood says.

In the past, Carlsberg couldn't do much to help these bar owners, but IoT is changing that. The company is testing IoT sensors on the kegs, taps and lines that deliver its beer in bars. Sensors inform bar owners when it's time to order more beer. As it collects more data, the system should be able to predict when particular beers are likely to be in demand. The IoT system also tracks product expiration dates and alerts bar owners about cleaning cycle stages. "They give the bar owner and us more visibility into operations. Our service engineers can do predictive maintenance," Haywood says.

Carlsberg is running its sensor system trials in Italy. If they work well there, Carlsberg will roll them out throughout Europe and in China, Russia and Vietnam.

The company is also experimenting with using AI to taste-test its beer. "Today, it's done by panels of tasters who can sense flavors. But flavors can be scientifically detected, so we can use AI to predict consumer response," Haywood says. By analyzing the flavonoids in beer, the company could develop algorithms that predict consumer reactions.

But Carlsberg doesn't plan to eliminate its human tasters. Tasting takes place at several junctures during the brewing process, and the company still plans to use humans to sample the final product.

The value of AI "tasting" is that it can happen earlier in the brewing cycle. "You don't have to wait for

flavors to mature, like you do for a human palate to taste them," Haywood says. The company could quickly test potential flavor variations for its existing beers or develop entirely new products. "AI could really accelerate our R&D cycle to bring new products to market," Haywood says.

"Flavors can be scientifically detected, so we can use AI to predict consumer response."

—Sarah Haywood,
Chief Technology Officer and
Vice President of Technology
at Carlsberg Group



CASE STUDY 4

Using Blockchain To Streamline Contracts

“Blockchain is not the answer to all problems in finance, but it is a great solution for international trade,” says Anton Rutten, head of IT systems at Rabobank, an international bank based in the Netherlands.

International trading is notorious for transactions that get bogged down in paperwork and manual checks. Because buyers and sellers often don’t know each other, the process is a necessary evil to ensure that all parties are performing their duties in accordance with contract stipulations.

Blockchain could eliminate many of the cumbersome steps, Rutten says. Last year, the bank began using a blockchain-based platform to improve efficiency.

“There is one digital contract that keeps track of all changes, such as ‘confirmation order received,’ ‘goods have left the warehouse’ or ‘goods have gone through customs.’ It increases trust in the supply chain,” Rutten says.

As the bank uses the platform, which it is developing with partner [we.trade](#) and other international banks, it keeps finding new ways to improve transactions. “It will be in development for the coming years,” Rutten says. “The goal is to make a real change in international trade finance.”

Blockchain can solve problems in other industries, too. “It’s still early days, but use cases are emerging,” Arumugavelu says. Verizon is working on a blockchain solution for multiparty transactions in its wholesale business.

“If partners have disputes over billing or other matters, we have to invest significant time and resources to make a disposition. With blockchain, we can build data transparency with our partners and manage business rules with smart contracts that will ultimately eliminate these disputes. Everyone is on the same page at all times,” Arumugavelu says.

The company may also try blockchain in its supply chain. “When vendors

provide us with inventory, we can make sure it’s tracked all the way from origination to point of sale. There’s greater visibility and it eliminates manual work on the back end,” Arumugavelu says.

“With blockchain, we can build data transparency with our partners and manage business rules with smart contracts.... **Everyone is on the same page.**”

—Shankar Arumugavelu,
Senior Vice President and
Global CIO at Verizon Wireless

Orchestrate Change Management

AI, machine learning and other emerging technologies will cause tremendous cultural change throughout the enterprise over the next few years. By 2021, 80% of midsize to large enterprises will change their cultures as digital transformation accelerates, recent research indicates.¹

Steering the organization through this tumultuous period will be the CIO, whose responsibilities will extend beyond the traditional role of choosing and implementing the right solutions. To succeed in using advanced technologies, the CIO must also ensure successful adoption. In the survey, over 80% of CIOs said they see themselves as the primary leaders of change management. They also said gaining employee buy-in and collaboration is the single most critical factor for achieving technology success.

As AI and RPA become prevalent, CIOs will have to deal with the workforce's fears about job security. "It's important for CIOs to work with business leaders to explain that an RPA bot will take away work that is repeatable and give employees the opportunity to focus on high-value work. It will give

them professional development opportunities," Arumugavelu says.

Over 80% of CIOs say they're the primary leaders of change management.

Organizations will also need to help employees build new skills.

"How do we embed digital technology into the DNA at Carlsberg?" Haywood asks. "Employees in the factory are traditional blue-collar workers used to working with technology hands-on. How will they embrace IoT and sensors? We need to build capabilities internally."

CIOs must find effective ways to communicate the value of advanced technology throughout the enterprise and convince people who are stuck in silos to see the big picture. Here are two large organizations' successful strategies for getting employees and business leaders on board.

¹ "Gartner Predicts by 2021, CIOs Will Be as Responsible for Culture Changes as Chief HR Officers." Gartner, February 11, 2019. [https://www.gartner.com/en/newsroom/press-releases/2019-02-11-gartner-predicts-by-2021--cios-will-be-as-responsible#targetText=Gartner%2C%20Inc.%20predicts%20that%20by,chief%20HR%20officers%20\(CHROs\),&targetText=However%2C%20culture%20change%20is%20a,in%20peoples'%20mindsets%20and%20practices.](https://www.gartner.com/en/newsroom/press-releases/2019-02-11-gartner-predicts-by-2021--cios-will-be-as-responsible#targetText=Gartner%2C%20Inc.%20predicts%20that%20by,chief%20HR%20officers%20(CHROs),&targetText=However%2C%20culture%20change%20is%20a,in%20peoples'%20mindsets%20and%20practices.)



CASE STUDY 5

Sparking Global Demand For Chatbots

Generating enthusiasm for technology is often a struggle for technology leaders. “As the CIO, you can see possibilities with technology very easily, but other business leaders and employees sometimes don’t,” says Shivani Saini, CIO of GlaxoSmithKline Asia Pacific Consumer Healthcare.

To build technology awareness in business units, Saini requires everyone on her IT team to create tech experiments aimed at solving business problems. Currently, 10 to 20 such experiments are underway in the Asia-Pacific region.

To increase interest in new technology, Saini organizes Oxford-style debate events for employees, inviting industry thought leaders to discuss topics like robotics, AI and retail innovations.

The debates are taped and broadcast throughout the company’s worldwide offices.

“They have had an enormous impact on the mindset of the employees. They think differently, challenge the status quo and take risks,” Saini says.

After airing one debate, the company was overwhelmed with demand for chatbots. “Before, no one knew what a chatbot was. Now they’re coming to me and asking for one, instead of me going around and telling everybody why they need one,” Saini says.

Requests have come from business unit leaders, sales and marketing departments, general managers and factory managers across the globe. “The demand is so high, we need to make a chatbot factory,” Saini says, meaning she will need to assemble a team to rapidly develop chatbots for new use cases.

Seeing the demand, the company quickly agreed to provide money to build the bots, saving Saini from having to make her case to

other executives. “I’m creating the demand and getting my funding for it,” she says.

Generating demand was once the province of sales and marketing teams. Saini’s experience shows that for creative CIOs it can be a powerful way to accelerate the deployment of new technology.

“Before, no one knew what a chatbot was. Now they’re coming to me and asking for one.”

—Shivani Saini,
CIO of Asia-Pacific
Consumer Healthcare
at GlaxoSmithKline



CASE STUDY 6

A Simple “Yin/Yang” Technique Promotes Cooperation

Charles Forte, CIO of the U.K. Ministry of Defence, wants to build a unified state-of-the-art digital technology system across all of his country’s armed forces. The system would feed real-time intelligence to pilots and equip soldiers in the field with IoT visors, providing them with information about the terrain or the presence of enemies.

“We’re putting the best digital and information capability into the hands of the front-line user. This could be a defense intelligence specialist in an office or a deployed soldier using the same system to receive up-to-date and relevant information and delivered in ways that makes it easy to access and understand.”

But creating a connected system is tough in the military, a large, complex and diverse organization where leaders tend to focus on their own services alone.

“We need to work as a cohesive end-to-end organization and allow

information to flow freely across air, land, sea, space or cyber domains. The biggest challenge for me is, how do we get people thinking and working in ways that promote greater cohesion, integration and speed?”

Forte has had success deploying a yin-and-yang symbol in meetings with military leaders. The point is to dramatize the extent to which managing change can be a process of negotiating between competing imperatives, with the ultimate goal of achieving resolution.

Pointing to the yang side of the symbol, Forte asks what capabilities the leaders want from digital technology. In answering, those leaders often cite the need to develop new weapons quickly and integrate them so that they function with existing systems—both their own and those of the other services.

Then Forte asks, “What if you make changes—do you want those to integrate with other systems as well?” Invariably they do.

While they consider the advantages of integration, Forte points to the yin side of the symbol, saying, “Here’s the rub. If that’s what you want, you have to give up building your own technology architecture. We need to transition to a single IP road system so that everyone follows the same traffic light.”

To describe how a unified architecture works, he uses the familiar example of Amazon, which allows outside sellers to use its platform if they follow certain rules. “I say, ‘If you don’t follow the rules, you can’t be in the club.’ That seems to resonate,” he says.

He also avoids jargon. “I translate principles out of obscure technical terms into language people use every day.”

By the end of his simple presentation, leaders usually agree to give up their proprietary platforms in favor of improving capabilities for all.

Solve The Talent Gap

To transform their organizations with advanced technology, CIOs must address a serious and growing talent shortage. Through 2022, the talent pool for emerging technologies will be inadequate to fill at least 30% of global demand, [one study](#) found.

In addition to hiring new talent, companies will need to retrain existing workers to keep up. By 2022, the fundamental skills required to perform the majority of roles will change by 42%, according to a [World Economic Forum report](#).

According to the Forbes Insights survey, the top way in which CIOs planned to address the talent shortage was through outsourcing, but they also emphasized the importance of retaining and engaging existing staff.

The number two solution was “offering strong career paths to current employees,” followed by “presenting the team with interesting and challenging work.”

“Your staff may not have cutting-edge experience, but they may have tremendous institutional knowledge,” says Arumugavelu. “It’s a matter of reskilling them with relevant abilities for the future.” Organizations can approach training in a number of ways. The U.S. federal government has created a [program](#) to teach existing employees sorely needed cybersecurity skills. To meet the needs of the long-term future, the government wants to make technology a greater part of the educational curriculum. “How can we start with technology earlier in secondary schools? How can we make technology attractive to diverse groups of people?”

asks Suzette Kent, the Federal CIO for the U.S. government.

Private CIOs must also strike a balance between present and future needs, putting out fires while keeping an eye on the landscape ahead. They should assess their teams’ skills every year to determine current critical needs and tweak their projections for the future, working closely with HR leaders to develop coherent strategies for filling gaps. Not surprisingly, half of CIOs in the survey said they expect their influence over HR to grow considerably.

Solving the talent gap requires more than one approach—and a little creativity doesn’t hurt, either. Here’s what one bank is doing to prepare for the future.



CASE STUDY 7

Gamifying Hiring

DBS Bank has a two-pronged approach for acquiring the technology skills it will need in the future.

The first is providing training to existing staff and inspiring them to adopt new solutions. “We don’t think old technologists can’t learn new skills,” CIO David Gledhill says. “Most people can and will change if they’re given the right guidance.”

The bank also tries to attract skilled workers by positioning itself as a technology innovator. “To acquire new talent, you need to gain mindshare and get yourself known as a strong technology company,” Gledhill says.

In one program, the bank gives applicants an online test, then invites those who score best to a two-day hackathon, where they work to solve banking-related challenges using AI, machine learning or other new technologies.

“We’ve gamified hiring. People love a challenge,” Gledhill says. The competition also allows applicants to experience the bank’s working environment and technology firsthand.

Participants are divided into teams of eight, and each team works with a DBS advisor. At the end of the event, top performers are awarded job offers on the spot—an important draw in an industry where getting hired often involves lengthy applications and interviews conducted over a period of weeks. The first hackathon attracted 12,000 applicants and resulted in hundreds of highly skilled new hires.

A DBS Bank hackathon challenge drew 12,000 applicants, **resulting in hundreds of highly skilled new hires.**

Transition To Revenue Generation

As CIOs expand their roles as corporate strategists, they will gain greater financial responsibilities and will work closely with other executives to spot new money-making opportunities. Over half of CIOs are already responsible for at least some revenue-generating initiatives, and by 2020 that figure will rise to 89%. Over half expect to head a profit center by 2025.

Many of the new opportunities will feature the use of customer data, often in apps. Here's how one CIO created a machine learning app to empower a company's salesforce.



CASE STUDY 8

Driving Sales With Predictive Analytics

Sales executives are constantly searching for ways to make their staffs more efficient and effective. At GlaxoSmithKline, Shivani Saini put salespeople miles ahead by overseeing the development of an app that uses predictive analytics to guide decisions.

The app uses AI and machine learning to analyze sales data towards determining which products sales representatives should try to upsell or cross-sell to a particular customer. Before the app, sales reps spent hours poring over data sets in an attempt to make selling decisions. Often the work overwhelmed them and they relied on guesswork instead. Now they spend less time preparing, and their pitches are better targeted and more successful.

In addition to providing sales suggestions, the app contains image-recognition software. This software lets GlaxoSmithKline reps,

who work with store managers to replenish inventory, make instant restocking decisions simply by taking photos of store shelves. “For a given store, we know exactly how many boxes of Sensodyne need to be on the shelf to meet demand. If the picture shows less, the salesperson knows how many more need to be ordered,” Saini says.

The app also uses those snapshots to identify infractions of GlaxoSmithKline rules about how stores should physically position the company’s products on their premises. “Products may not be easy to read or pick up. The spacing may not be right,” Saini says. Using the app, sales reps can work with store managers to resolve problems in a single visit. They can make sure, for example, that product labels all face in the right direction.

The app gives sales managers, for their part, better visibility into employee activity.

The app has rolled out to over 300,000 stores in China, India and Singapore, and will eventually see use in other Asian countries. At some stores, sales have increased 20%, Saini says. Overall, the app has resulted in additional sales revenue of “double-digit-million [British] pounds.”

“We’re not just giving people technology—we’re measuring the business results and the sales uplift,” she adds.

Saini can discuss sales numbers with the same fluidity with which she discusses technical IT matters. Her peers will want to achieve a similar fluidity. To succeed in 2025, CIOs will need to start gauging their technology’s success not only by the efficiency it fosters, but also by the revenue it produces.



The CIO In 2025

Over the next five years, CIOs will assume a vital strategic role, guiding the enterprise through seismic technological shifts that will fundamentally alter the way people work and the way the business competes and makes its money.

This Forbes Insights report shows that CIOs are carving out many different paths to success. Yet the different strategies have much in common. They all involve the development of highly effective leadership skills; the strategic introduction of advanced technologies; the necessity of winning buy-in for disruptive

solutions; the search for new data-driven revenue opportunities; and the adoption of a multifaceted approach to finding talent.

Above all, CIOs must continually strive to gain a deeper understanding of the businesses in which they work, learning when and where to improve efficiency and how to refine existing products and create new ones to meet changing consumer demands.

Navigating this path won't be easy. It will require constant vigilance as technologies evolve and competitors, including nimble startups, rush new

products to market. It will also require close collaboration with other C-suite leaders and business managers.

As they encourage other leaders to "think like CIOs," technology leaders themselves must learn to think like leaders of finance, marketing, human resources, security and other business domains. Only by forming strong internal and external partnerships can CIOs overcome the many challenges that lie ahead. Those who succeed will position their companies to be the leaders of 2025.

Methodology

Forbes Insights and VMware surveyed 652 CIOs across the globe about the future of their role in April 2019. Some 31% of respondents were from North America; 39% from Europe; and 30% from the Asia-Pacific region, including Japan. These CIOs represented a wide range of industries, including financial services, government, healthcare, manufacturing, retail and telecommunications. All CIOs were from organizations with annual revenue of \$1 billion or more, with 16% from firms with \$10 billion or more in revenue.

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Forbes insights

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