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Insights



# Manifesting legacy: Looking beyond the digital era

2018 global CIO survey: UK edition

## TECH TRENDS AND TRANSFORMATION

As digital reality, cognitive, and blockchain continue to redefine IT and business, organisations should look to move beyond vertical or horizontal approaches to new technology. Ideally, strategy, technology, and operations should work together, in harmony, across domains and boundaries.

Learn more about **Deloitte's Consulting Services**, which bring together executives across the C-suite to solve complex problems and uncover new opportunities, including: **The Future of Mobility, Internet of Things, Business Transformation Services, Digital Enterprise, and Cyber Risk Services.**

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# Executive Summary

**D**ELOITTE'S 2018 GLOBAL CIO survey 'Manifesting Legacy: Looking beyond the digital era' takes us further into understanding the increasing pace of change to the role of the Chief Information Officer (CIO) as they, and their organisations, evolve the role of their lead Technology Executive to respond to the challenges and opportunities of today's 'digital' era. Through in-depth interviews and online surveys, we collated the opinions and insights of over 1,400 technology leaders across more than 70 countries.

Manifesting Legacy focuses on assessing the role of the CIO as organisations become further immersed in the digital era, to fully explore not only how prepared they are for supporting the business in achieving their strategy, but also to lead it. We have gathered the opinion of CIOs and business CxOs to provide a multi-faceted view on the role the CIO has to play in achieving business strategy. We also explore the approach to organisations investing in emerging technologies to streamline business processes, engage employees and customers and drive new value-generating business models. Whilst investment in technology has increased there is still a limited fund, and therefore we explore how well structured organisations are in determining the optimum technology for their business needs. In a business-led, technology-enabled mind-set, we need to ensure business needs are at the forefront of technology investment and that CIOs have representation in the right forums to support this decision making process. Finally, we analyse the changing skills needed and the challenges CIOs face in not only recruiting talented resources, but also retaining them in a competitive market where all forms of talent competitors are offering differentiating propositions.

## THE CIO ROLE IN A DIGITAL ERA

In previous surveys, we explored the three distinct pattern types (trusted operator, change instigator and business co-creator) that represent how CIOs deliver value to their organisations. This year's survey continues to reflect on these roles and assess how, during the immense change brought on by the digital era, they have positioned themselves against these roles. Surprisingly, for many CIOs, their roles have not evolved in line with the expectations of their business. Despite the perception that digital has been impacting businesses for some years, fewer than 10% of respondents identified themselves and their companies as being advanced in the journey to incorporate technology into their digital business strategies and more than half having not started at all. The report explores how this is a critical moment for the 55% of CIOs that are still acting as trusted operators, a role that will likely, in time become obsolete. It identifies the traits needed to shift to leading business growth and digital transformation and identifies the top areas for focus over the next 3 years as delivering major organisational change and transformation (66%), building high-performing teams (63%) and being results oriented (50%). In order to do this, CIOs may need to challenge their current talent model, rebalancing their organisation's technology expertise to support collaboration with the business; respondents saw a 50% increase in the demand for skills like Cognitive Flexibility, Emotional Intelligence and Creativity.

The positioning of the CIO in an organisation is increasingly critical to meeting the challenge presented by the digital era. The CIO is expected to have foresight on the next disruption or opportunity, continuously innovate and work effectively with ecosystems of partners and vendors – all often in the context of an organisation that increasingly needs to be fluent in technology. CIOs are in the perfect position to place themselves at the forefront of a company's development, inspire change and support the executive in becoming smarter about the technology choices they take advantage of to transform their business. The key to doing this successfully

will be to look across the whole organisation in order to transform it and ensure that funding priorities and budget allocation recognise the changing scale of technology's role in an organisation. Helping the organisation embrace a culture that embraces technology and is increasingly "tech fluent" to keep pace with the evolving technology opportunities, also requires the CIO to put culture change at the heart of their agenda.

## EMERGING TECHNOLOGIES

The Digital era has provided the CIO the opportunity to step up to become a business leader that drives top line growth with many now realising this agenda for their enterprise. 40% of CIOs expect emerging technologies to have a major impact on their business in the next 3 years including significant investment in artificial intelligence (AI), machine learning, Internet of Things and robotic process automation. CIOs in digital vanguard organisations expect to invest more heavily in AI and machine learning than those in other sectors, perhaps reflecting that they are working from an already transformed, solid foundation. Adoption and embedding of emerging technologies has become a positive differentiator for organisations, but this situation will shift to one where a lack of engagement and adoption will become a negative differentiator.

Many organisations are dabbling in emerging technologies, making initial progress in a number of edge-plays, resulting in pockets of innovation springing up around the enterprise like digital popcorn. Without considering a broad strategy for scalability and adoption however, CIOs are seeing these initiatives stall as organisational antibodies from the traditional eco-system start to bite. The resulting lack of return on investment, damage to credibility and frustrated relationships can even prevent the organisation from continuing to pursue these technologies, preventing the drive to digital transformation.

## CHANGING SKILLS

Emerging technologies demand new skills sets, but the picture is increasingly more complicated than this. Technologies themselves are applied in different ways, with analytics and customer experience to the fore. The market for new talent consists of millennials and Generation Z who are looking to companies that are inclusive, have a positive culture that supports change and does not fear failure and contributes to society. CIOs need to have a plan to evolve the culture of their organisation whilst maintaining traditional IT, which continues to rely on the deep knowledge of specialists. Existing IT staff will need time and training to develop digital skills and may need to focus on interpersonal actions as they move from diligent order takers to effective collaborators and business problem solvers. Externally, a plan to recruit in the middle of a market salary range will not get the job done and digital vanguards increasingly see their reputation as a differentiator when seeking out new talent. CIOs need to be able to combine all of these elements into a coherent plan to recruit and retain the future leaders that stand to inherit their digital legacy.

Our conclusions from the report are as follows

- **The CIO in the Digital era.** As we have discussed, the challenges the CIO's face are increasingly broad, harnessing innovation, transforming the workforce, protecting the organisation and delivering against the business strategy. CIO's must be able to clearly articulate the value the corresponding investments bring to their organisation, however only 20% of CIOs have a structured process for measuring the value of their technology investments, with 14% not measuring business impact at all. This lack of transparency will lead to stalled investments and an inability to deliver against this broad transformation agenda before it has even begun.
- **Emerging technologies.** 40% of CIOs selected emerging technologies as the most impactful technology area for their business in the next three years – a 135% increase over the 2016 survey. As CIOs embark on building innovation capabilities, a structured process will encourage experimentation while ensuring alignment with business strategy. This innovation strategy will ensure a focused view of the developing marketplace and help organisations to avoid being constantly distracted by the next shiny thing.
- **Changing skills.** As the mission of IT has expanded, the need for specialist expertise has waned, and 60% of respondents report difficulty in finding the right balance between technical and soft skills. CIOs must have a talent strategy that reflects the needs of the future state organisation with less administration, greater automation and putting analytics and customer experience at the centre of service design.
- **Cloud Adoption.** CIOs expect that cloud investments will double as a percentage of IT spend over the next three years from 22% to 44% with a similar increase in the level of mission critical infrastructure in the cloud, from 28% to 54%, and nearly a third of CIOs (32%) report the use of cloud infrastructure for critical business applications. This has significant implications for the organisation's risk profile and ways of working. Without a clear road map covering the Operating Model and scaling adoption and consumption, CIOs will struggle to achieve the intended value of cloud adoption and support the delivery of the overall business strategy.
- **Cyber challenge.** CIO's are under increasing pressure to maintain and secure the integrity of business-critical assets, however only 49% of CIOs identified security and privacy as a strategic investment. For a CIO, the ability to respond to a cyber-attack and have clear recovery plans in place is no longer a discretionary activity and the lack of a plan now represents a real risk to the business.



PREFACE

# Manifesting CIO legacy beyond the digital era

IN THE PAST, as organisations developed back-end technology to support business needs, the CIO’s primary mandate commonly was to “keep the lights on and the trains running.” Business growth was often defined as increasing scale, complexity, and integration of systems—objectives that required CIOs to be trusted operators, focusing almost exclusively on operational excellence. They could build a legacy by providing operational discipline and enabling technologies that were efficient, reliable, and cost-effective.

In 2015, Deloitte’s global CIO survey, *Creating legacy*,<sup>1</sup> introduced the trusted operator, change instigator, and business cocreator as three distinct pattern types that represent how CIOs deliver value to their organisations (see sidebar “CIO pattern types” for more detail).

We surmised then that no pattern type was superior; instead, each was a manifestation of the

organisation’s specific needs and mandates. The 2016–17 survey, *Navigating legacy*,<sup>2</sup> expanded on this theme by concluding that CIOs’ roles were likely to shift among these pattern types over time as the needs of the organisation changed.

## Our 2018 survey reflects the immense changes brought about by the digital era.

Our 2018 survey reflects the immense changes brought about by the digital era. The third and final CIO legacy report, *Manifesting legacy* suggests that although 55 percent of CIOs are currently serving as trusted operators, this pattern type will gradually become obsolete as the digital era progresses. To remain relevant and influential and help their organisations use technology to enable business

### CIO pattern types

*These two pattern types will likely contribute to the two mandates of the CIO in the future—transforming business operations and driving top-line revenue and growth.*

*CIOs should shed the perception of being operationally focused.*



**Business cocreators** spend most of their time driving business strategy and enabling change within their businesses to ensure effective execution of the strategy.



**Change instigators** take the lead on technology-enabled business transformation. They also focus on delivering emerging technologies and supporting business strategy.



**Trusted operators** deliver operational discipline by focusing on efficiency, reliability, and cost. They provide enabling technologies and align with business strategy.



strategy, CIOs should develop themselves as change instigators and business cocreators.

Today, organisations typically expect CIOs to do more than keep the lights on and the trains running. Survey respondents indicate that the top two expectations of CIOs are to align to business strategy and transform business processes, with IT operational excellence following as the third. Yes, CIOs should build and maintain solid back-end core systems, but they also need to leverage digital technologies to streamline business processes, engage employees and customers, and drive new value-generating

business models. For many organisations, business strategy and technology are inseparable; business leaders understand the influence of both.

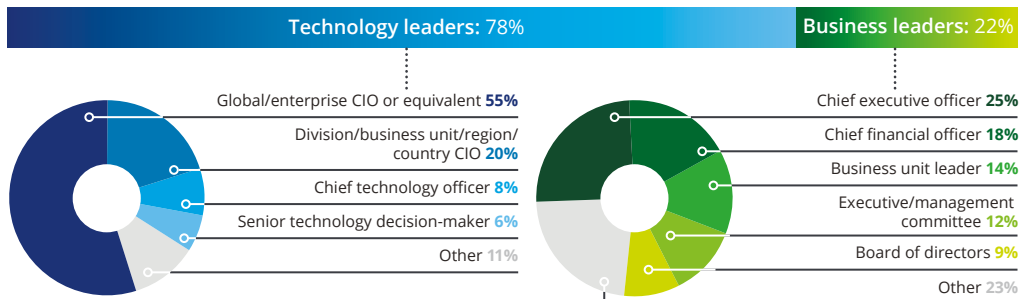
For CIOs, digital can present an uncommon opportunity to realign their roles to the new business reality. And this is where it gets personal: Are you satisfied being known mostly as a competent functional leader? Or do you want to help shape and lead the digital future of your organisation? That's a choice you may need to face sooner than you think. And, if you're inspired to elevate and expand your role, how do you go about realising that ambition?

FIGURE 1

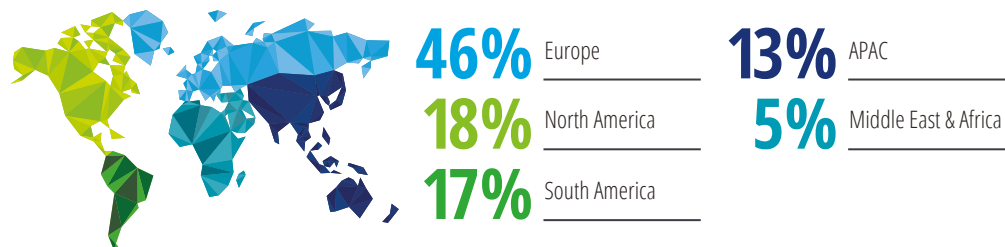
### The state of the CIO role



### Current role of survey participants



### Survey geography



Note: Percentages may not total 100% due to rounding.  
Source: 2018 Deloitte global CIO survey.

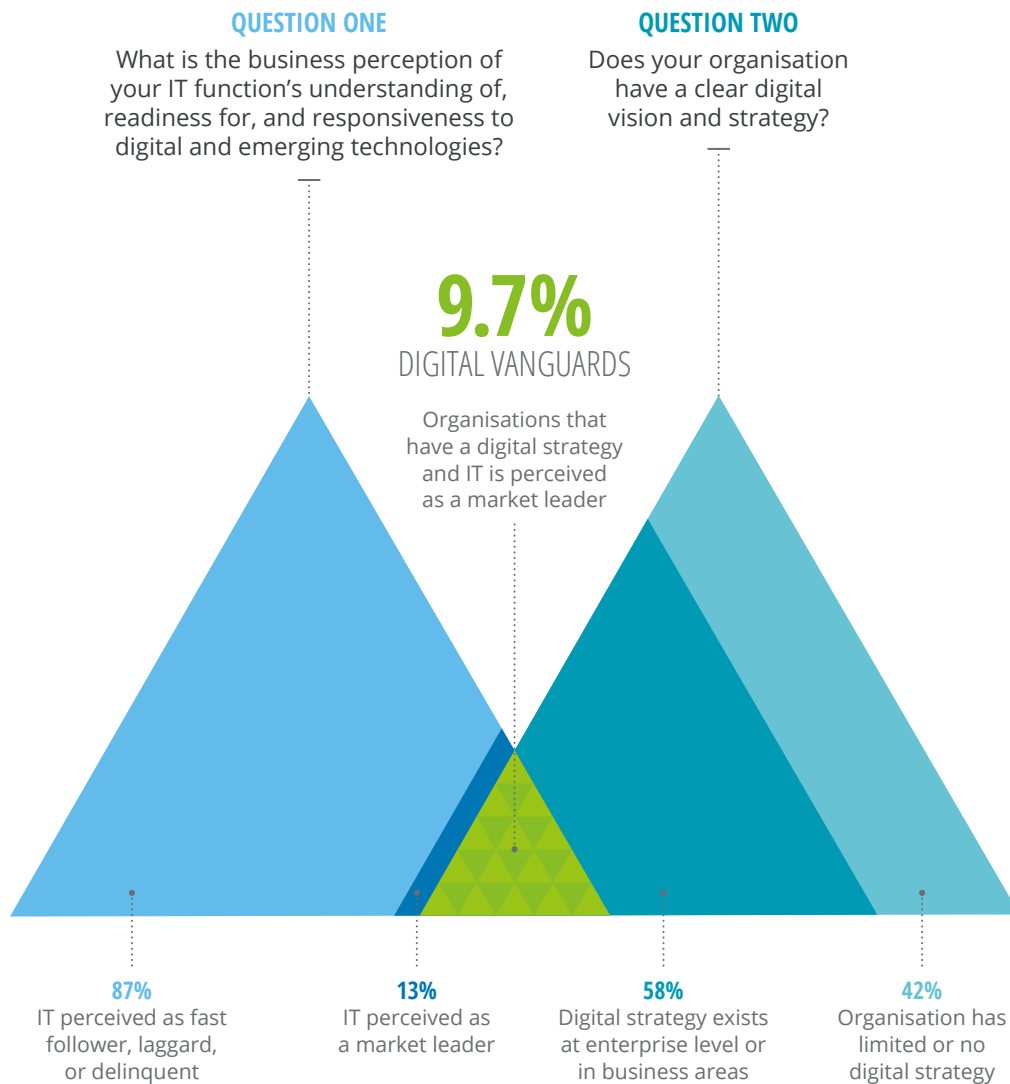
Are there deliberate actions, behaviours, shortcuts, and avoidable detours that could accelerate and amplify the path to an evolved tomorrow?

This year’s global CIO survey of 1,116 CIOs and 321 CXOs reveals the current state of the CIO role—and what will likely be required for CIOs to remain relevant over the coming years.

Nearly 10 percent of this year’s survey respondents are leaders who have advanced farther in the journey of incorporating technology into their digital business strategies than others. These respondents report both that their organisations have a clear digital vision and strategy and that the IT organisation is perceived by the rest of the business as a market leader in terms of digital and emerging technologies (see figure 2).

FIGURE 2

**Only 10 percent of CIOs represent digital vanguard organisations—leaders in aligning technology and digital business strategies that may serve as role models**



CIO N=994, 1,094.  
Source: 2018 Deloitte global CIO survey.

We call these organisations **digital vanguards**. We observed measurable differences between these organisations and *baseline organisations* in terms of defining the CIO's role, acquiring and retaining IT talent, allocating funding and investments, and ultimately delivering value. Digital vanguards have not yet reached their digital destination, but they are a few years ahead of the rest. They serve as a guide for what the future may hold beyond current digital initiatives.

The digital era presents CIOs with the opportunity to **look inward** and reinvent themselves by breaking out of the trusted operator mold. We note, as in previous surveys, the importance of strong relationships to the CIO's business success. This year we suggest that developing a technology fluency programme can help create a solid foundation for these relationship-building efforts. A tech fluency programme can provide organisations with knowledge about technology trends, scalability of emerging technologies, and complexities of managing legacy core systems—while enabling CIOs to understand internal and external customer perspectives.

CIOs can also **look across** the IT organisation and transform it, particularly by focusing on the IT operating model, funding priorities and budget allocation, and tech talent and culture at the heart of their digital agendas.

## Digital vanguards serve as a guide for what the future may hold beyond current digital initiatives.

Finally, CIOs can **look beyond** emerging technologies at the peak of their popularity—although many of these technologies may be fundamental to the organisation's digital vision—to the technological core, which should be modernised to be a successful foundation for these new emerging technologies. The core can then become a platform for a systematic innovation process that helps CIOs foster credibility by driving an understanding of emerging technologies, strategically prioritise innovation projects, build business cases, and deliver proofs of concept.

In the digital age, technology has increasingly become a primary driver of business transformation and growth, ending the era of business-led, technology-enabled organisations. Today's successful organisations—and their CIOs—are adopting a technology-led, business-enabled mindset to drive transformation, growth, and revenue.

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## SECTION ONE: LOOK INWARD

More than half of CIOs surveyed are focused on efficient, reliable IT operations. Unless they transform themselves—and their organisations—they may fall short in meeting mandates for business growth and transformation that are increasingly driven by digital capabilities.

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### CHAPTER ONE

# Reinvent yourself



**M**ANY ORGANISATIONS, REGARDLESS of industry, are looking to harness technology to drive business growth and transformation. For example, Canadian Blood Services CIO Ralph Michaelis notes, “Just about everything we do depends on technology. The organisation depends on us to help transform business models and change the way it does business.”

While new organisations are born digital, many CIOs in organisations that are digital non-natives struggle to close the gap between traditional technology stacks and emerging digital capabili-

ties—cloud, mobile, social, automation, cognitive, and more—that can enable streamlined processes, increase employee and customer engagement, and drive new business models.

In 2018, most CIOs surveyed (55 percent) continue to function as trusted operators who focus on IT efficiency, reliability, and cost containment (see figure 3). The minority take the lead on technology-enabled business transformation (change instigators) or drive and enable growth through the execution of business strategy (business cocreators). There has been very little change in CIO pattern type

distribution since our 2016 survey—a situation that cannot continue if CIOs want to remain relevant within their organisation. As Univar Inc. CIO Eric Foster notes, “It’s critical for CIOs to ensure that IT strikes the right balance between driving future tech-enabled disruption and being too focused on day-to-day technology needs—otherwise it’s easy to suffer from the perception that we’re not thinking about business value and outcomes.”

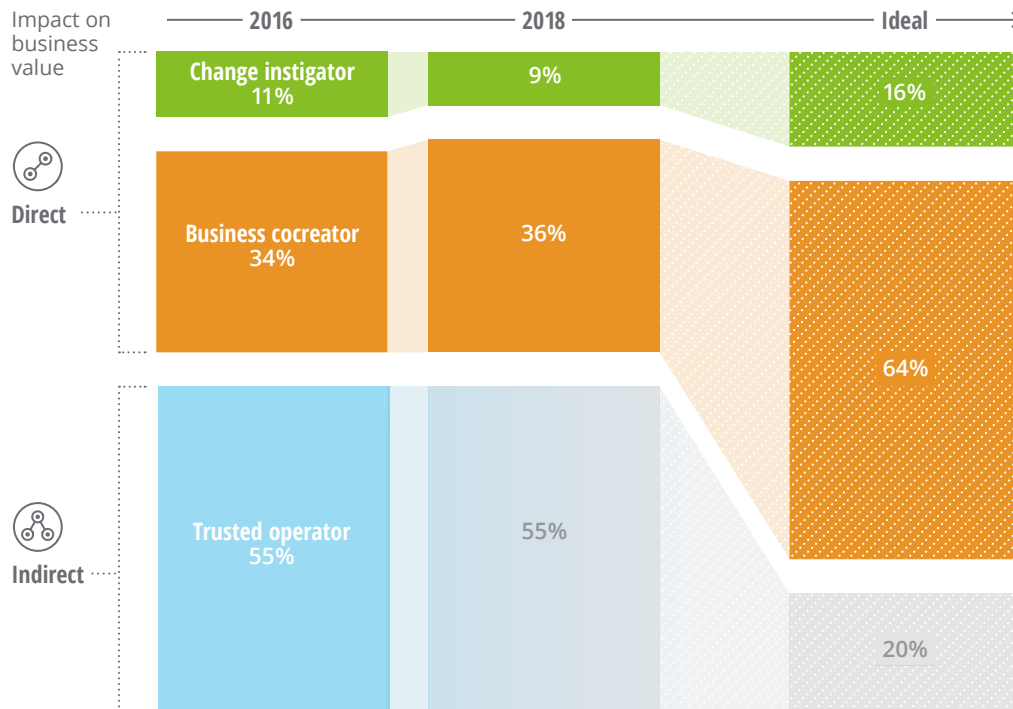
### Evolution of the CIO: Trusted operator is not enough

Many CIOs certainly recognise the changes needed: They expect that leadership expectations and CIO responsibilities will evolve to be more transformative and growth-oriented over the next

three years. However, this hardly means that their operational responsibilities will disappear; operational efficiency and reliability will likely remain a given, and the responsibilities of the trusted operator will likely become table stakes. But the day-to-day management of the technology infrastructure can be delegated to others within the IT organisation or, in some cases, outsourced to outside vendors. “The organisation expects us to be a business partner, not just evolve our IT operations,” says CBA (Alumínio) CIO Luis Carlos Maldaner, “and prefers that we provide the link between technology and business performance while relying on external partners for technological capabilities.” A shift in how the business expectations are evolving is evident, and IT is being brought to the table to discuss business issues, Maldaner continues, noting, “We are being engaged in new initiatives as business partners and being

FIGURE 3

### The evolution of the CIO’s role remains stagnant, with more than half of CIOs still serving as trusted operators—a role that will likely become obsolete



CIO N=1,116.  
Source: 2018 Deloitte global CIO survey.

brought into discussions that are not necessarily related to IT.”

### WHAT GOT YOU HERE MAY NOT GET YOU THERE

For many, the transition from functional leader to organisation leader will be challenging. Many CIOs rose to the position of IT leader based more on technology know-how than on vision, communication, or relationship skills. To become organisation leaders, however, CIOs will likely need to develop the business and soft skills necessary to translate technology expertise into business solutions that drive revenue and efficiencies.

The traditional competencies around delivering results and being problem-solvers will likely carry less weight (see figure 4). Our survey data shows that CIOs recognise the need to evolve specific leadership skills in the future—focusing on delivering major organisational change (66 percent), building high-performance teams (63 percent), and influencing others (48 percent).

Additionally, CIOs will likely need to develop leadership values that centre on providing direction, harnessing innovation, and empowering others to drive the digital agenda. Not surprisingly, digital vanguard CIOs list innovation as their top business priority (57 percent), followed by customers (56 percent), and growth (48 percent). In baseline organisations, innovation is listed as only the fourth most important business priority (43 percent), following performance (56 percent), customers (48 percent), and cost (44 percent). Digital vanguard CIOs appear to recognise the increasing importance of innovation given the rapidly changing landscape.

Digital vanguard CIOs are also 42 percent more likely than CIOs of baseline organisations to be business cocreators and change instigators, who have more of the skills and capabilities required to transform business operations and drive top-line growth significantly than do trusted operators.

CIO skills and capabilities aligned to business transformation and growth:

- Understand how to align new and emerging technologies to support market and business demands
- Develop, articulate, and communicate a clear vision for how technology can enable business strategy
- Develop influential relationships with leaders across the organisation
- Create a high-performing culture to attract and retain top talent
- Engage ecosystem partners to deliver change

### A CRITICAL MOMENT

This is a critical moment for CIOs who are ready to step out of the shadows and join the ranks of executives strategising and executing the business's next moves. The digital era has arrived at an opportune moment for CIOs looking to burnish their business credentials.

Digital has brought many organisations to a crossroad where they must lean on technology to transform business operations and drive top-line growth. As technology gurus, many CIOs are well positioned to inform, shape, and lead their organi-

**As technology gurus, many CIOs are well positioned to inform, shape, and lead their organisations' digital efforts.**

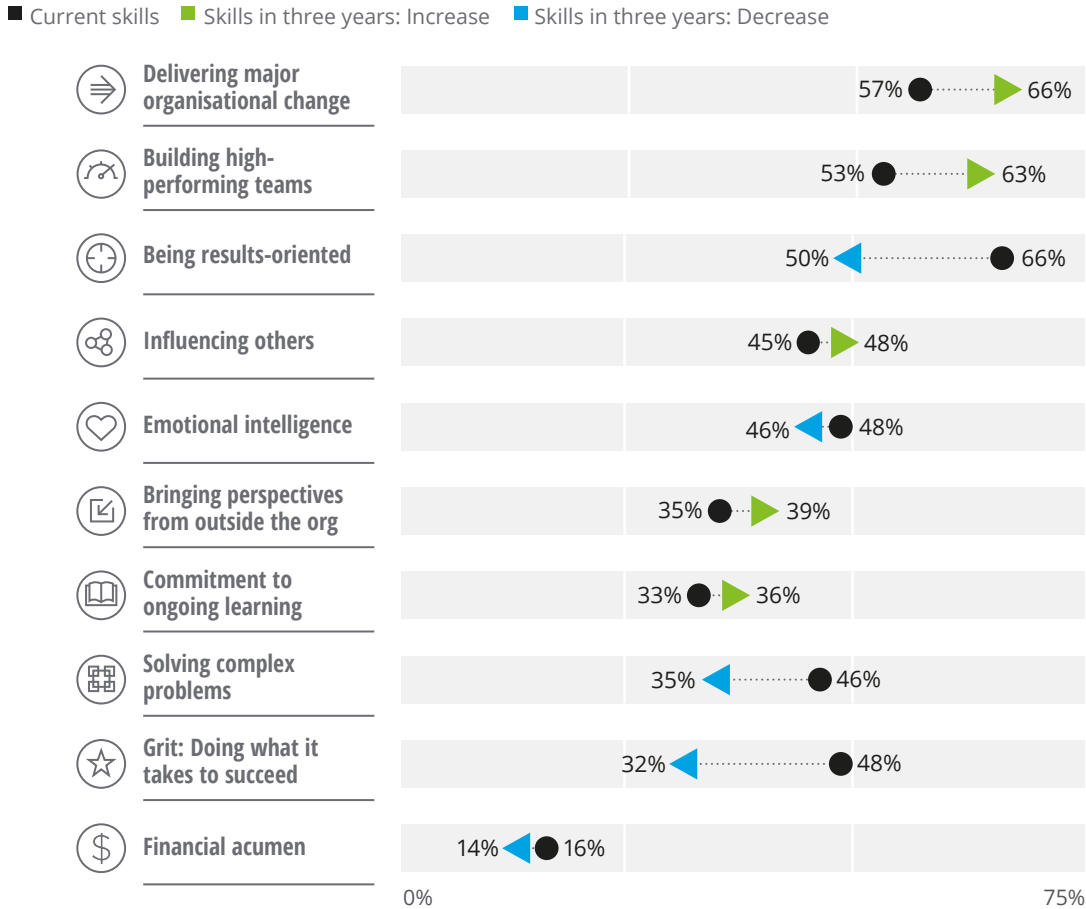
sations' digital efforts.

Leveraging their technology and business expertise, CIOs can use digital to become more engaged with strategic business initiatives and to help drive true transformation throughout the IT organisation and across the business. Digital can present CIOs with the opportunity to be the business leaders that they want to be—and that their organisations need.

FIGURE 4

### Traditional CIO leadership skills focused on operations and delivery may no longer be sufficient

Which leadership skills contributed most to your personal success as a leader? Which will do so in the next three years? (Please rank your top five.)



#### Leadership values for digital change<sup>3</sup>



**DIRECTION**  
Provide vision and purpose to drive digital



**INNOVATION**  
Create the conditions for experimentation



**EXECUTION**  
Empower people to think differently

N=911.  
Source: 2018 Deloitte global CIO survey.

## Harness “digital” as a proxy for change

Ninety-six percent of the executives surveyed identified *digital* as a strategic priority, at either a functional or organisation level. However, only a quarter of respondents say their organisations have an enterprisewide vision and strategy in place. Our data also indicates that the definition, span, and scope of digital varied significantly (see figure 5). Organisations are using digital technologies and capabilities to transform business operations (69 percent) and drive top-line growth through improved customer experiences (64 percent), two digital pillars that neatly align with CIOs’ two mandates. IT is also engaged in its own initiatives: transforming IT infrastructure and cloud (51 percent) and organisation platforms (50 percent). The absence of digital strategy and definition can present an opportunity for CIOs to lead—or at least influence and align—digital strategy and execution.

The lack of definition and clarity on digital is not necessarily a disadvantage: It can be turned into an advantage for CIOs who can help shape and define it. While 60 percent of CIOs surveyed indicate that they do not lead digital strategy development, 27 percent of those organisations in which another leader is responsible for the digital strategy still have a CIO responsible for leading digital execution (see figure 6). In other words, many CIOs already have one leg in the digital waters through their IT initiatives and responsibilities, but they likely need to expand beyond leading with the technology lens. They should prepare to expand their influence across other areas of the organisation.

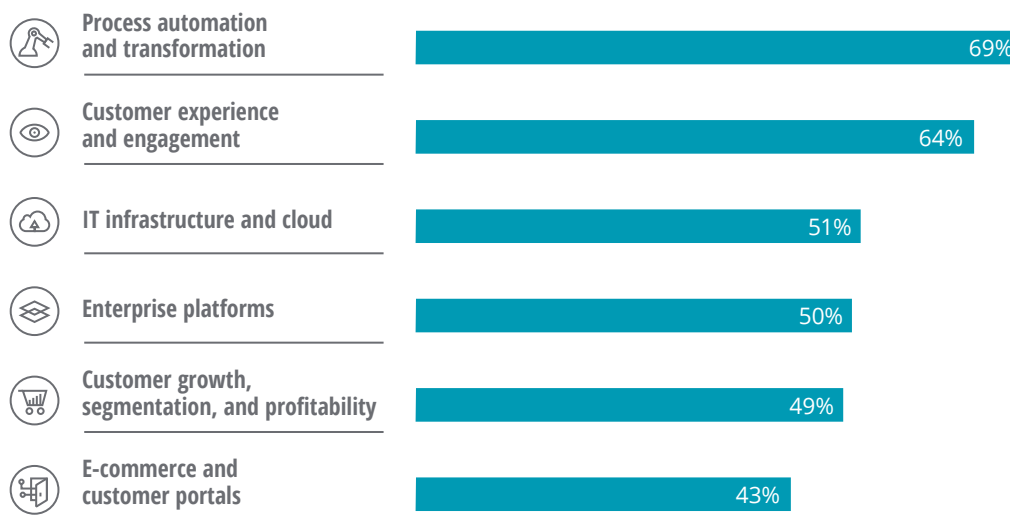
## Now it’s your turn: The CIO future is here

We are at the edge of a digital era in which many organisations, regardless of industry, are looking to harness emerging technologies to drive business

FIGURE 5

### The scope and span of digital varies across enterprises, but process transformation and customer experience drive digital focus

What are the primary focus areas of digital within your organisation? (Please rank your top five.)



CIO N=1,014.  
Source: 2018 Deloitte global CIO survey.

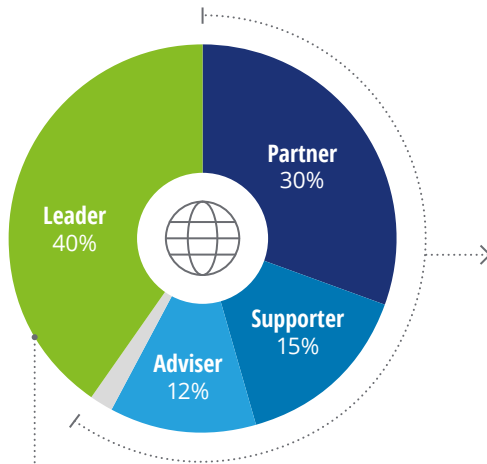


FIGURE 6

**CIOs don't always lead digital strategy but are often still responsible for digital execution within their enterprises**

**Digital strategy**

What is your role in developing your organisation's digital strategy?

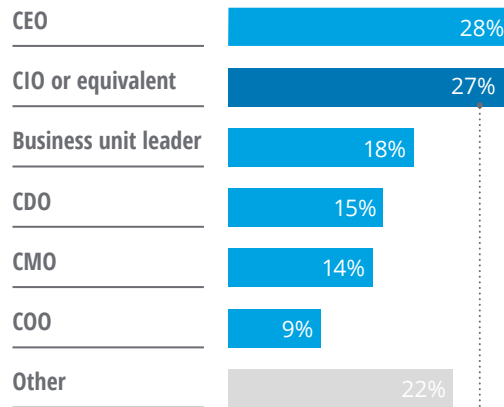


**40%**

OF CIOs INDICATE THAT THEY LEAD DIGITAL STRATEGY

**Digital execution**

If you are not leading digital strategy, who is responsible for leading digital execution in your organisation?



**27%**

OF CIOs STILL LEAD DIGITAL EXECUTION AMONG THE **60%** THAT DON'T LEAD STRATEGY

N=1,017, 606.  
Source: 2018 Deloitte global CIO survey.

transformation and growth. In response to these changes, the CIO's role may be quickly shifting from being a steward of technology to a partner in shaping the future of the business. Nearly 70 percent of survey respondents agree that the CIO—even more than the CEO (61 percent)—will have one

of the most important roles in driving digital initiatives in the next three years.

As technology leaders, CIOs with vision, communication skills, and relationships are well positioned to command more influence and responsibility than ever before.

**“Digital transformation is less about a digital strategy and more about how to do business in a digital world. If we lead with technology, we're achieving digital insertion. Leading with the business outcomes ensures we are transforming.”**

— Anne Mullins, CIO and corporate vice president, Lockheed Martin

CHAPTER TWO

# We need to talk



**N**EARLY EVERYONE WHO has traveled overseas knows the difficulty of conducting even simple transactions with someone who does not share your language. Building a meaningful, influential relationship can be next to impossible.

That's one reason why, for years, CIOs have been encouraged to learn the language of business—and many have become fluent. But as technology increasingly accelerates organisations, it can be equally important for the business to understand the language of technology. From the board and the C-suite to functional leaders and staff, everyone across the organisation should be tech fluent.

Of course, it can be unrealistic to expect any executive to grasp all the IT jargon that rolls off a systems developer's tongue. But employees across the organisation can try to understand three dimensions in which technology can enable business performance and growth:

- **Creating value.** Digital and other emerging technologies can help empower the business to

streamline processes, engage employees and customers, and drive new business models.

- **Rewiring the business of technology.** Achieving this value can depend on transforming how organisations budget, fund, prioritise, and deliver technology solutions.
- **Developing priorities.** A strong technology foundation can't be short-circuited by shiny new technologies. Modernising the core IT infrastructure to support business ambitions should not only be on the road map but also recognised as a strategic priority.

## A CIO—especially a business-savvy CIO—can play an important role within the organisation as a technology interpreter, influencer, and visionary.

A CIO—especially a business-savvy CIO—can play an important role within the company as a

## WHAT IS TECH FLUENCY?

Tech fluency—the ability to broadly understand and confidently discuss IT concepts<sup>4</sup>—can be an important skill for C-suite leaders, board directors, and employees throughout the organisation. By promoting tech fluency and expanding it throughout the business, CIOs can help create a shared baseline of knowledge that engages leaders and employees and helps optimise technology's impact.

For example, business leaders who understand the fundamental concepts and benefits of technology solutions may be more likely to approve, fund, and participate in those initiatives. Developers, strategists, sales executives, and marketers can collaborate more effectively on products and customer tools.

An effective tech fluency programme could include major systems and concepts such as:

- The core systems supporting the IT environment;
- Internal and external systems that enable major business functions (for example, finance, customer service, data management, cybersecurity, and sales);
- The company's business model, including the levers of profitability, technologies supporting business strategy and revenue generation, and the influence of technology on the business model over the last decade;
- Broader disruptive technology forces (for example, cloud, cognitive, and blockchain); and
- The role of technology in supporting market participation and fostering competitive advantage.

By leveraging their technology and business expertise to develop and drive tech fluency, CIOs can help enable organisation leaders and employees understand and maximise technology's potential.

technology interpreter, influencer, and visionary. But that typically requires strong relationships across the organisation. One important way to cultivate those relationships and increase influence is to help organisation leaders become tech fluent.

## Tactics for enhancing tech fluency

Business leaders often enjoy invoking new digital capabilities such as AI and augmented reality. But bring up risk management and the interdependencies of the current IT environment, and you'll likely hear crickets. Flashy digital capabilities may generate all the headlines, but they are built on a strong technology core and depend on hardware and software that are usually much less colourful.

Enterprisewide technology literacy requires more than one-off watercooler conversations. A

well-structured education, communication, and engagement plan can help. While nearly all surveyed CIOs (96 percent) consider educating the business about technology issues to be one of their responsibilities, only 66 percent have developed proactive educational initiatives that reach beyond the executive level to help build tech fluency across the organisation.

CIOs of baseline organisations tend to rely on ad hoc tech fluency exchanges such as bringing new and emerging technologies into strategy conversations (72 percent) and conducting one-on-one technology discussions (51 percent). Fewer use broader approaches that target the organisation when compared to digital vanguard CIOs. For example, 34 percent of CIOs of baseline organisations hold enterprisewide briefings on technology fundamentals, compared to 44 percent of those in digital vanguards; and 30 percent of baseline organisation CIOs recommend and provide training

Manifesting legacy: Looking beyond the digital era

on key technology topics, compared to 43 percent of those in digital vanguards (see figure 7).

Not only can these tech fluency labours help CIOs build strong business relationships, they can also help develop organisational support for digital strategies and burnish the CIO's image as an organisational leader.

CIOs can develop initiatives that drive up organisational tech fluency through broad-based programmes, followed by individual curricula for specific audiences based on their needs and interests. Framing the conversation around specific technologies and issues and their business implications can help prevent business stakeholders from

getting caught up in external hype. This usually requires careful planning along with customised learning via both formal and informal channels.

## From colleague to influencer

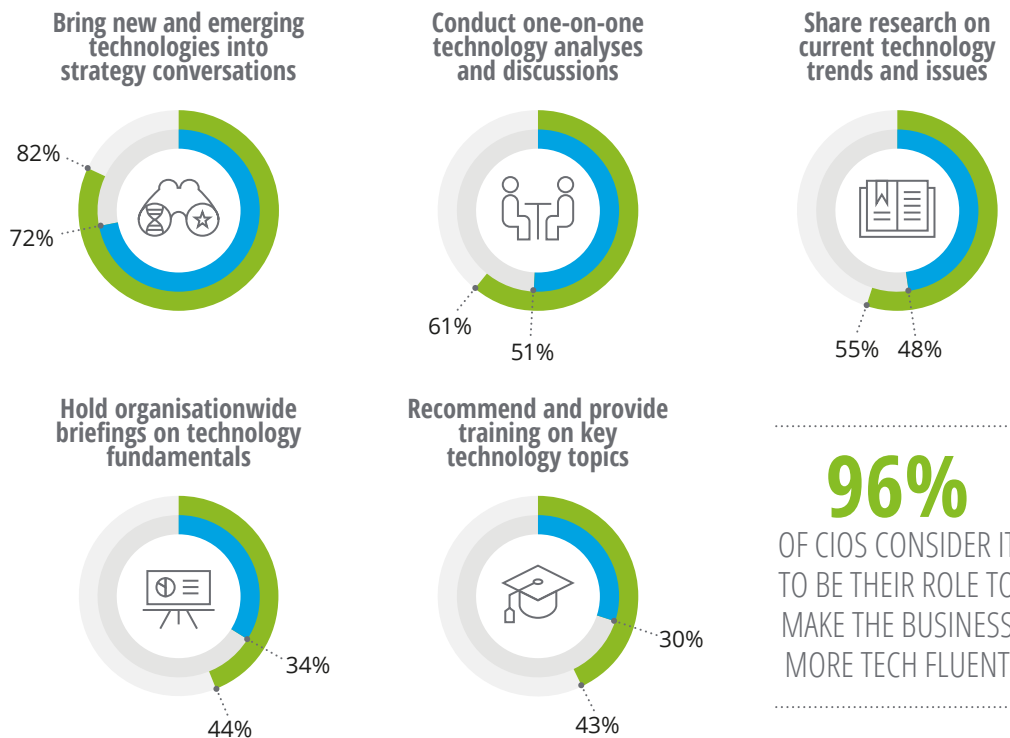
Strong relationships can be essential for CIOs looking to elevate their roles and become organisation leaders. CIOs report strong relationships with certain peers—especially back-office leaders—but even these relationships often tend to be transactional and ad hoc. Their relationships with executives in customer-facing functions such as

FIGURE 7

### CIOs consider it their responsibility to help the business understand technology, but many have yet to develop comprehensive tech fluency programmes

What initiatives do you have in place to help business leadership better understand technology? (Please select all that apply.)

■ Digital vanguards ■ Baseline organisations



CIO N=873.  
Source: 2018 Deloitte global CIO survey.

“In order for IT to be invited to the table as a strategic partner, we have to build credibility by delivering a highly available and secure production platform and by delivering successfully on major change projects. When those fundamentals of IT are in place, you can hold a conversation about how to make technology a competitive advantage for the business.”

— *Rahul Samant, CIO, Delta Air Lines*

sales, marketing, and product development/engineering are weaker (see figure 8).

Our research shows that CIOs are 1.5 times more likely to report having a *strong* or *very strong* relationship with other business functions when they customise their tech fluency efforts. CIOs in digital vanguard organisations, comprising 10 percent of survey participants, are also more likely than their peers in baseline organisations to report strong or

very strong relationships with other business functions, particularly customer-facing teams.

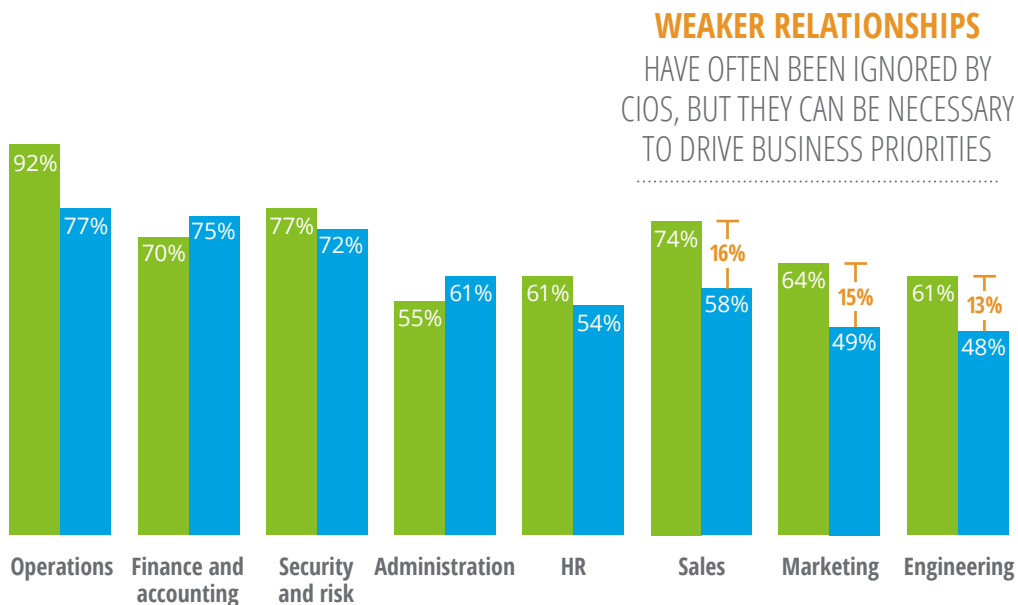
Sixty-eight percent of digital vanguard CIOs report strong or very strong relationships with other business functions compared to only 60 percent of those in baseline organisations. The gap between CIOs in digital vanguards and those in baseline organisations is even more apparent when examining customer-facing functions: Sixty-five percent of

FIGURE 8

### Digital vanguard CIOs are more likely to have strong relationships with both front- and back-office functions

How strong would you rate the IT function’s relationship with the following business functions?

■ Digital vanguards ■ Baseline organisations



N=931.  
Source: 2018 Deloitte global CIO survey.

digital vanguard CIOs report a strong or very strong relationship compared to only 50 percent of those in baseline organisations.

To fulfill the business mandate to grow revenue and transform business operations, CIOs should consider developing technology fluency initiatives for both customer-facing teams—the revenue engines—and back-office functions, the fuel that keeps the organisation running. Their differing needs may require customised technology fluency programmes.

On the flip side, CIOs and IT teams also should be more fluent in understanding and addressing customer needs and expectations. More than half of IT teams collaborate with the business on projects to design and deliver customer engagement platforms (62 percent) or design customer products and solutions (55 percent). But fewer are involved in proactive measures such as introducing new technologies to improve customer engagement (48 percent), establishing joint processes with marketing and sales (42 percent), or analysing data for customer insights (36 percent), all of which could result in stronger understanding and appreciation of customer needs and ultimately enable the

business to develop better customer solutions (see figure 9).

By deepening their interactions with customer-facing business units, CIOs can gain opportunities to initiate digital strategies to grow customer loyalty and revenue, which could help them evolve from order-taker to business adviser.

## Face time with the board matters

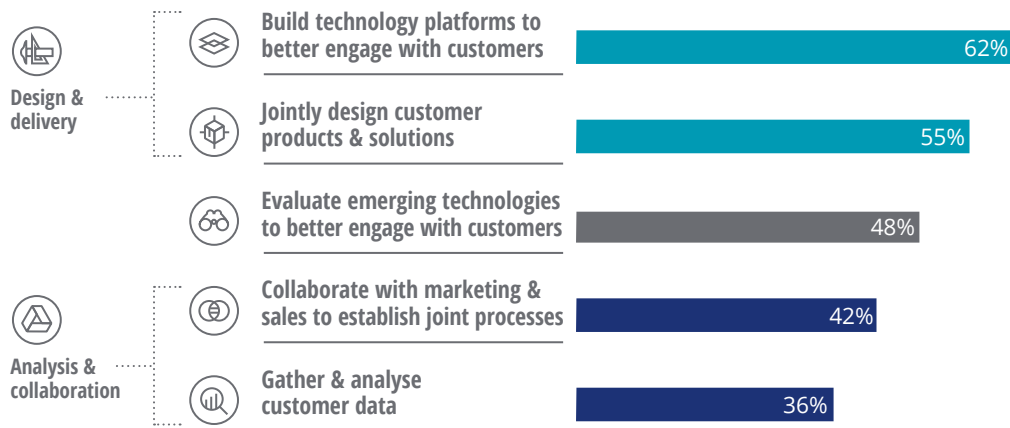
The CIO's tech fluency strategy can be extended across the organisation to its board of directors through consistent interactions and technology-focused conversations.

A company's financial performance can be directly linked to the tech fluency of its board of directors. A Deloitte study of US public companies shows that S&P high performing companies—defined as those that outperformed the S&P 500 by 10 percent or more over three years—are nearly twice as likely to have at least one tech-focused board member than lower performers (32

FIGURE 9

### CIOs can establish joint processes and analysis capabilities to better understand customer needs and develop customer-facing solutions

Which of the following is true about how your IT function engages with the business to develop end-customer solutions? (Please select all that apply.)



N=893.

Source: 2018 Deloitte global CIO survey.

**“Digital is transforming B2B industries such as ours to the point that our customers expect B2C experiences. We simply cannot operate without transformative technology. Whether it’s providing the best customer experience, driving more value to customers, or delivering top-line and bottom-line results, technology is more than an enabler—it’s like the air we breathe.”**

— *Joel Grade, EVP and CFO, Sysco Corporation*

percent versus 17 percent).<sup>5</sup> And that’s where the CIO can come in.

CIOs should strive to be executive leadership’s trusted adviser for all things technology. And CIOs who have built their credibility with functional and C-suite leaders are more likely to be invited to the boardroom. “Boards expect CIOs to do more than provide operational excellence in managing risk and security,” says Peggy Foran, chief governance officer, SVP, and corporate secretary of Prudential Financial Inc. “Boards tend to look at technology from the perspective of risks rather than opportunity, but they also expect CIOs to focus on innovation, products, solutions, and trends that transform businesses. If I were CIO, I would make it my mission to play not only defence but offense.”

When it comes to board and subcommittee meetings, frequency matters (see figure 10). When CIOs interact with board members only annually, 91 percent focus on IT risk and cybersecurity, giving lesser attention to digital/innovation (39 percent) and technology return on investment (9 percent).

As the frequency of CIO and board interactions increases, the topics they discuss can become more balanced between technology risk and opportunities. For example, when CIOs meet with the board monthly, digital and innovation are discussed 75 percent of the time, with IT risk and cybersecurity dropping to 54 percent. Also, they are more than twice as likely to discuss technology ROI, increasing from 9 percent to 23 percent. This doesn’t mean that IT risk becomes less important—

more likely, there’s simply more time to discuss a wider range of technology topics and enhance the board’s tech fluency. Digital vanguard CIOs are slightly more likely to meet with board members on a monthly basis (38 percent) than CIOs of baseline organisations (33 percent).

## It’s a two-way street

Technology fluency can be the vehicle for CIOs to take their stakeholder relationships to the next level. It can allow them to present a technology solution based on a business need and give them the opportunity to proactively equip and train their stakeholders to understand and engage with technology and ultimately drive business value.

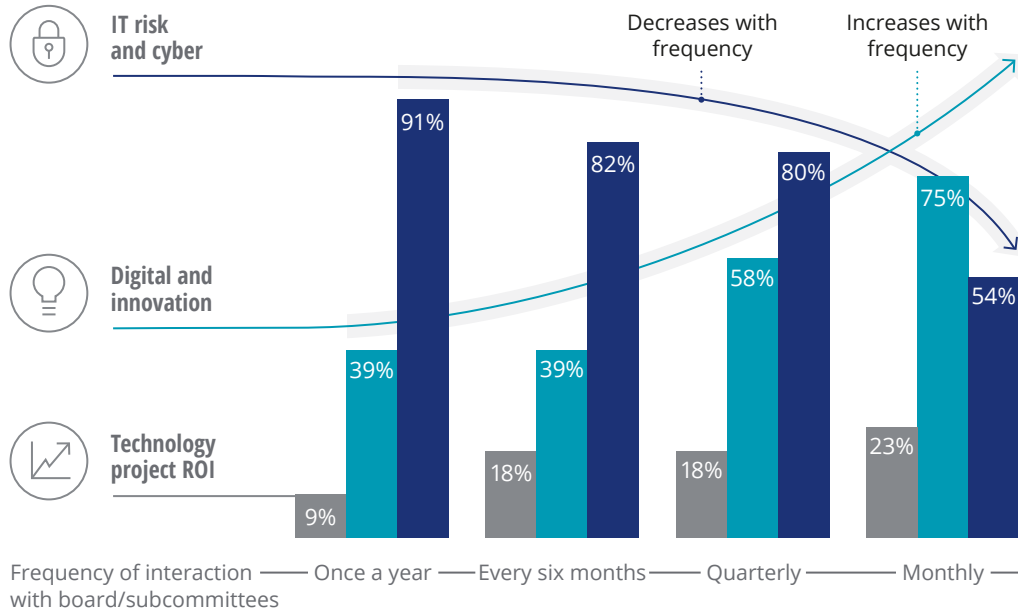
## Technology fluency can be the vehicle for CIOs to take their stakeholder relationships to the next level.

You’ll know your tactics are working when business leaders—both back-office and customer-facing—and board members come to you for advice to help solve business challenges. Technology fluency can help you build stronger relationships with key stakeholders and gain valuable insights into the needs of the business, allowing you to increase your credibility as an organisation leader.

FIGURE 10

### An increase in frequency of interaction with the board and subcommittees often leads to more strategic technology discussions

What topics were discussed in your board meetings? How often do you interact with your organisation's board or its subcommittees?



CIO N=978 and 877 respectively.  
Source: 2018 Deloitte global CIO survey.





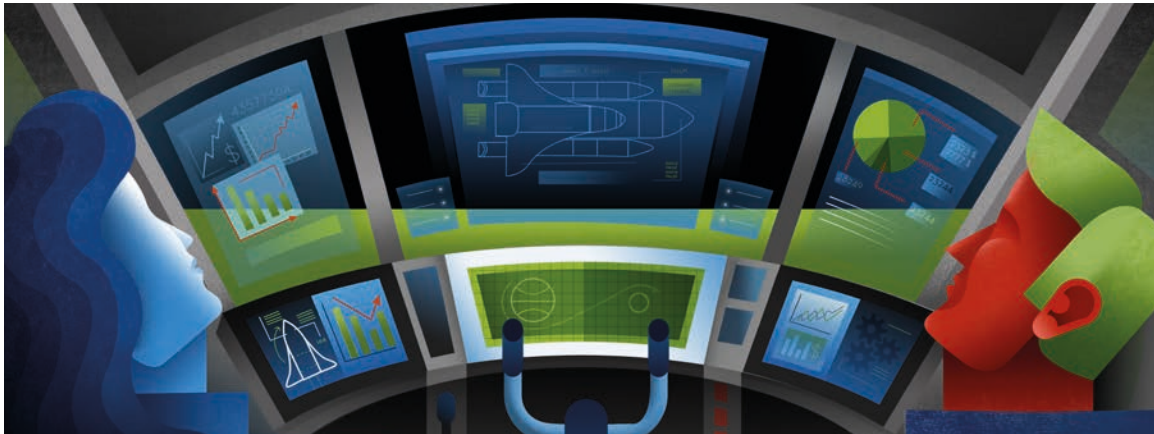
## SECTION TWO: LOOK ACROSS IT

In recent years, some enthusiastic industry pundits and executives have diluted the meaning of transformation to the point where it's often invoked to characterise incremental improvements. But in the digital era, the rate of change truly is growing exponentially, and we can't expect IT's traditional ways of working to keep pace.

Real transformation likely demands a whole new approach to delivering IT services. It's a multifaceted challenge with two critical elements: money and people.

### CHAPTER THREE

## Follow the money



**F**EW IT ORGANISATIONS today can support the rapid-fire change that's driving business—a fact that many CIOs recognise. Ninety-one percent of CIOs we surveyed expect to make one of the following changes to their IT operating model:

- **Implement flexible IT delivery (56 percent).** Agile, DevOps, or a similar IT delivery model—requiring iterative funding, a life-cycle view of the budget, and a mindset based on product rather than project—can increase IT responsiveness.

**“If you have a governance structure that aligns IT to the business, IT delivery should just sing. The IT organisation should be able to deliver what the business needs, maximise the value of technology investments, and improve every year.”**

— *Norm Fjeldheim, CIO and SVP facilities, Illumina*

- **Contract IT-as-a-service (56 percent).** Engaging service providers and partners to deliver usage-based IT services can help fill talent gaps, encourage innovation, and improve service delivery.
- **Guide architecture choices (54 percent).** Advising the business on technology architecture and infrastructure such as cloud solutions can help reduce costs, increase flexibility, and provide resilience.

Each of these changes could require significant financial investments and process changes, but each holds the potential to deliver long-term enterprise value. CIOs are often challenged to convince their peers that behind-the-scene technology investments are worthwhile. And only one-fifth of CIOs have access to dedicated finance talent who can help justify these investments to the C-suite and the board. “You have to partner to deliver quickly and keep up with the pace of the industry,” says Kiwi Wealth CTO Dave Bruce. “A critical factor in being able to balance delivering on our own versus leveraging partners is the support from the board in allocating funding for us to innovate and try new things.”

## Only one-fifth of CIOs have access to dedicated finance talent who can help justify these investments to the C-suite and the board.

But the CIO is typically still on the hook to connect technology investments to business outcomes. This can become easier when IT and the business work

together, jointly owning the full circle of investment processes from upfront planning to measuring results and impact. “I want IT to be viewed as enablers, so that people come to us with problems and ask how we can help them solve them. Too often we have rolled something out and haven’t had any input or engagement from members of Parliament and their staff and that ends up in frustration and complaints,” says Michael Middlemiss, CIO of Parliamentary Service of New Zealand. “Parliament is steeped in tradition, and there are processes and protocols that date back to the 1600s. People want to preserve some of those things, but for emerging technologies to benefit and add value there has to be a formal decision-making process that is jointly owned by IT and the people we serve.”

### Start here: Agree on what matters most

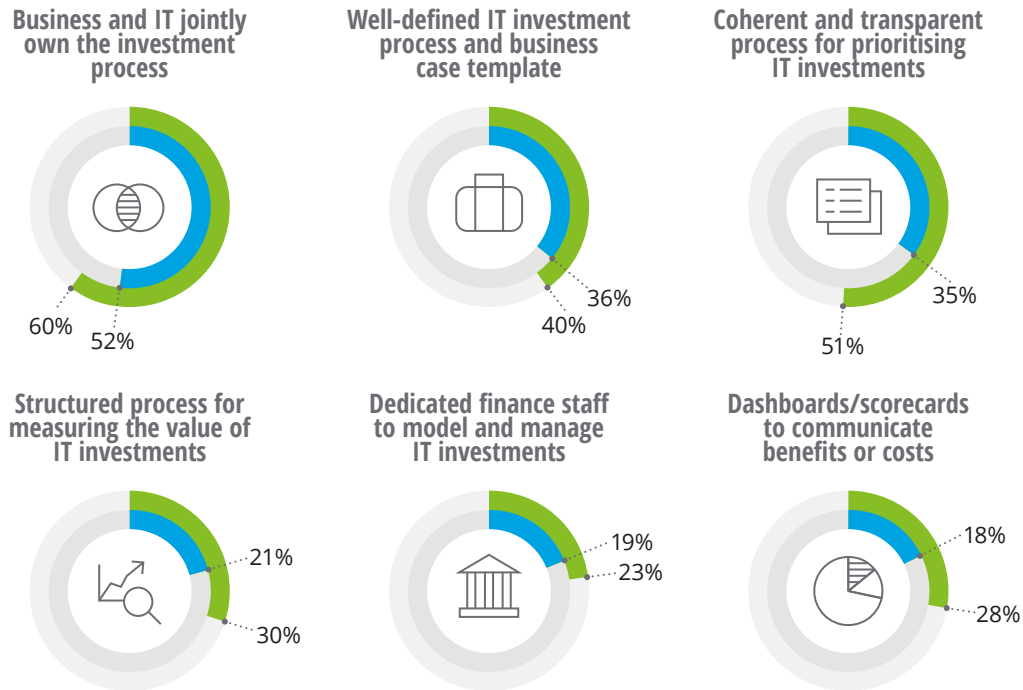
Our work with leading organisations shows that when IT and the business are aligned on investments and prioritisation, they are more likely to have a significant impact on business outcomes. Unfortunately, the CIO survey indicates that IT/business alignment is uncommon. Only 52 percent of baseline organisations have a technology investment decision-making process jointly owned by IT and the business, and only 35 percent have a clear process for prioritising IT investments. Digital vanguards are a little ahead: 60 percent share the investment process with the business, and about half have a clear process for prioritising IT investments (see figure 11).

FIGURE 11

### CIOs across the board have the opportunity to be more diligent in establishing IT investment governance

Which of the following statements about technology investments in your organisation are true? (Please select all that apply.)

■ Digital vanguards ■ Baseline organisations



CIO N=876.  
Source: 2018 Deloitte global CIO survey.

Digital vanguards are often more intentional about IT investment decisions than baseline organisations; vanguards have established more effective tech governance methods and are spending more of their IT budgets on business innovation compared to other organisations. But even these industry leaders have a long way to go.

### Show me the value

Board members and senior executives expect a positive return on all investments, including technology. Many IT organisations come up short. Only about one-fifth of CIOs and CXOs agree that their organisations have a structured process for measuring

**“CEOs are looking to IT to enable growth through technology innovation. This means changing the business mindset that IT is an expense versus an investment. This mindset change enables the organisation to efficiently allocate funds for innovation and measure the results.”**

— *Subhasis Mukherjee, VP and CIO, Pekin Insurance*

the value of technology investments. And surprisingly, 14 percent of respondents don't measure the business impact of IT investments at all.

Of the organisations that do measure value, about two-thirds evaluate IT investments on a case-by-case basis. About a quarter rely on business leaders to measure IT investment outcomes. Only 27 percent evaluate technology investments using a consistent financial model—a leading practice that can improve accuracy, objectivity, and alignment with business strategy.

Measurement methods that digital vanguards use may be slightly more effective, but there's still plenty of room for improvement. Compared to baseline organisations, vanguards are less likely to measure business results on a case-by-case basis and more likely to have a financial model. Interestingly, they also rely more on their business leaders

for measuring the impact of IT investments on business outcomes, which could indicate closer alignment with their business peers (see figure 12).

## Compared to baseline organisations, vanguards are less likely to measure business results on a case-by-case basis and more likely to have a financial model.

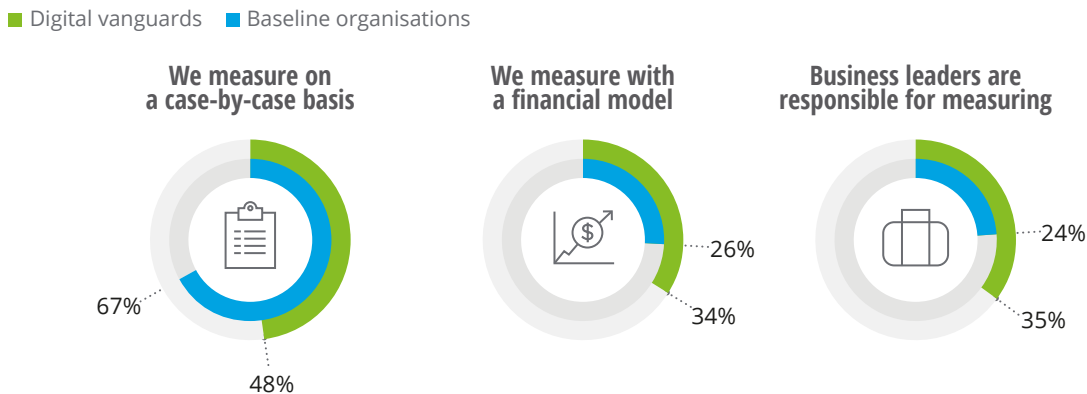
### Budgets held hostage

Lack of effective investment governance isn't the only hurdle. As CIOs try to reallocate budgets to increase IT's focus on innovation and business improvements, the traditional fixed annual funding cycle and a lack of discretionary funds can restrict their options. Project-based funding models often

FIGURE 12

### Measuring and demonstrating the impact of IT investments remains ad hoc

How do you demonstrate the impact of IT investments? (Please select all that apply.)



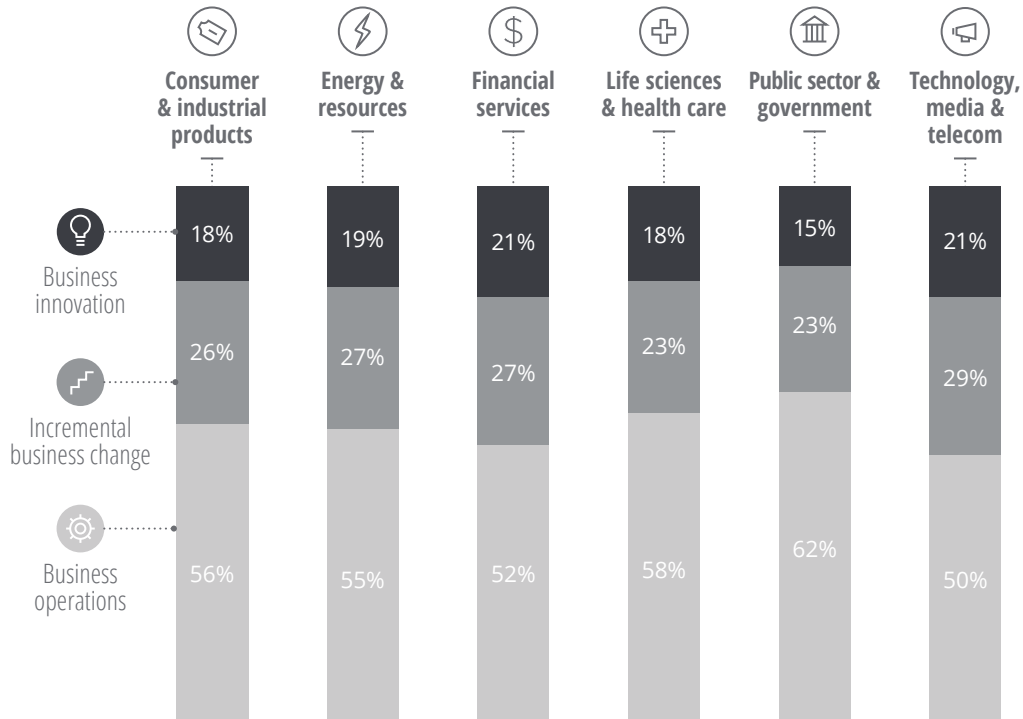
**14%** OF ALL ORGANISATIONS SAY THEY DON'T MEASURE THE IMPACT OF IT INVESTMENTS (10% AND 15%)

N=841.  
Source: 2018 Deloitte global CIO survey.

FIGURE 13

### Budget allocations remain similar regardless of industry, business needs, or digital maturity

How is your overall IT budget allocated?



N=883.  
 Note: Percentages may not total 100% due to rounding.  
 Source: 2018 Deloitte global CIO survey.

lead to chronic underinvestment in technology innovation and offer little flexibility for shifting business or technology environments.

Many CIOs will recognise this annual budget routine, in which most of IT’s budget is pre-allocated to ongoing business operations, and much of what’s left is set aside to tackle the business’s wish list of incremental improvement projects. Growth and innovation? That’s practically an afterthought. Remarkably, CIOs report similar budget allocations across industries, even those with very different business needs (see figure 13).

Only a few years ago, it wasn’t unusual for ongoing operations to make up more than 70 percent of IT’s budget. Cheaper storage and processing costs, cloud platforms, and outsourcing

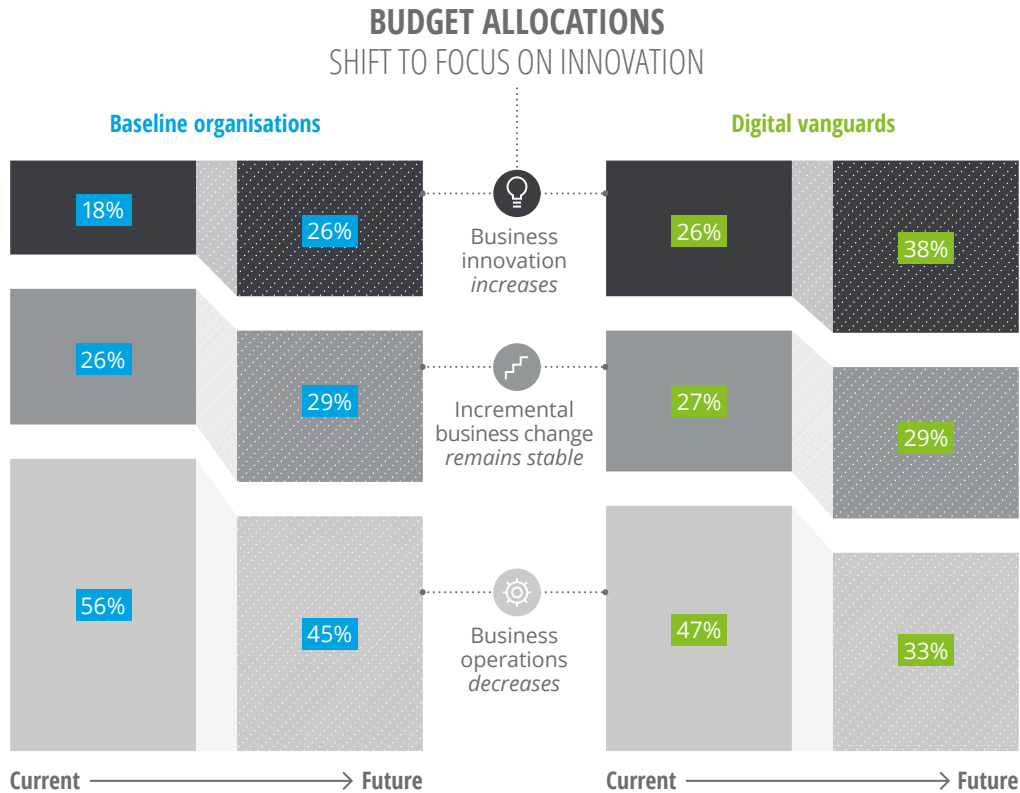
have helped drive down operating costs to about 56 percent today, but there’s more work ahead. CIOs expect ongoing operational costs to continue to drop over the next three years, thanks in part to greater efficiencies created by cloud, process automation, and an increasingly modernised core. The question is whether CIOs can take advantage of those savings and put them toward business innovation.

Many digital vanguards are a few years ahead of other organisations in shifting budget focus from operations to innovation. CIOs in these organisations allocate less than half of their budgets (47 percent) to operations, with nearly equal amounts going to business mandates: business enhancements (27 percent) and innovation/growth (26 percent). Over the next few years, they anticipate

FIGURE 14

**With less than half of their IT budgets allocated to operations, digital vanguards tend to lead in innovation spending**

How is your overall IT budget allocated?



N=883.  
Source: 2018 Deloitte global CIO survey.

reducing operational costs to about one-third of the total budget, with the savings primarily going to innovation spending, which is expected to increase from 26 percent to 38 percent (see figure 14).

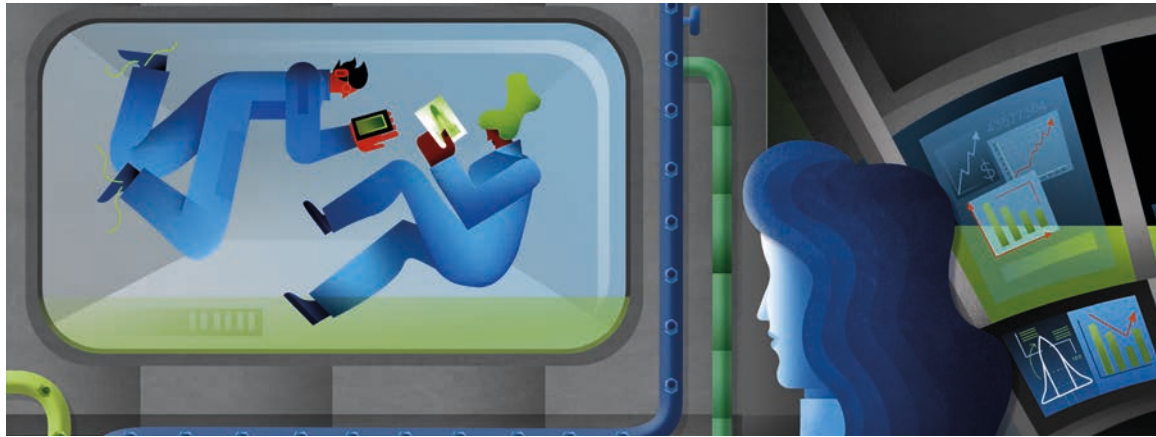
These gradual budget shifts can't be called truly transformative, though. What would it take to get there? The CIO's goal of a flexible IT delivery model will likely require iterative funding, a life-cycle view of budgeting that takes into account all costs over the technology's lifetime, and a mindset based on product rather than project. This fundamental shift in IT funding is in its early stages. For example, in our consulting work, we see some IT organisations shifting from annual, project-focused budgeting to continuous, capacity-based rolling budgeting. It's a start.

**Forge forward**

Many CIOs have the right intentions, but more is needed to compete and tell the value creation story. Many are burdened with antiquated investment processes and suffer from a dearth of supporting budgeting and forecasting skills. To truly revamp budgeting and funding processes and build governance structures that can enable and support such initiatives, CIOs will likely need to acquire the requisite skills and support in budgeting—and help ensure that consistent prioritisation, measurement, and accountability are established for technology investments. Bottom line? There's a lot of work ahead.

CHAPTER FOUR

# Transfuse talent and culture



IN RECENT DECADES, many IT workers became increasingly task-focused. Those with highly specific skill sets could typically work their entire careers within a single specialisation. Managers were commonly motivated to develop the soft skills needed to effectively communicate and collaborate with the business, but many remained unprepared to take part in IT's expanded role.

That's generally changing, for a number of reasons. More and more IT tasks are being automated, and IT organisations are retiring many of the specialised skill sets on which careers were built. As IT's mission moves from "build and run" to "imagine, explore, architect, and design," a new spectrum of roles typically requires skills quite different than even just a few years ago. And the convergence of technology domains encourages the mastery of adjacent skills instead of deep silos of expertise. To close the talent gap, reimagining

IT talent and culture transfusion is required—refreshing traditional skills and rethinking old culture.

## The convergence of technology domains encourages the mastery of adjacent skills instead of deep silos of expertise.

This could be good news for the IT workforce with the drive and ability to upskill their technical and interpersonal abilities. Granted, there will likely be fewer IT jobs: Survey data suggests that IT organisations will reduce the percentage of full-time employees from 82 to 75 percent of staff. But new roles are being created (for example, product managers), and those positions that do remain may turn out to be more satisfying and challenging, freeing up people to work with new technologies and business areas to deliver stronger business outcomes.<sup>6</sup>



“Twenty years ago, people branded themselves as SAP experts and even focused on a specific module, and that was going to be the focus of their entire IT career. Those days are gone. Today it’s about technology athletes—people who are curious and are always looking to solve business problems through technology.”

— Wayne Shurts, EVP and CTO, Sysco Corporation

### Wanted: Technology athletes

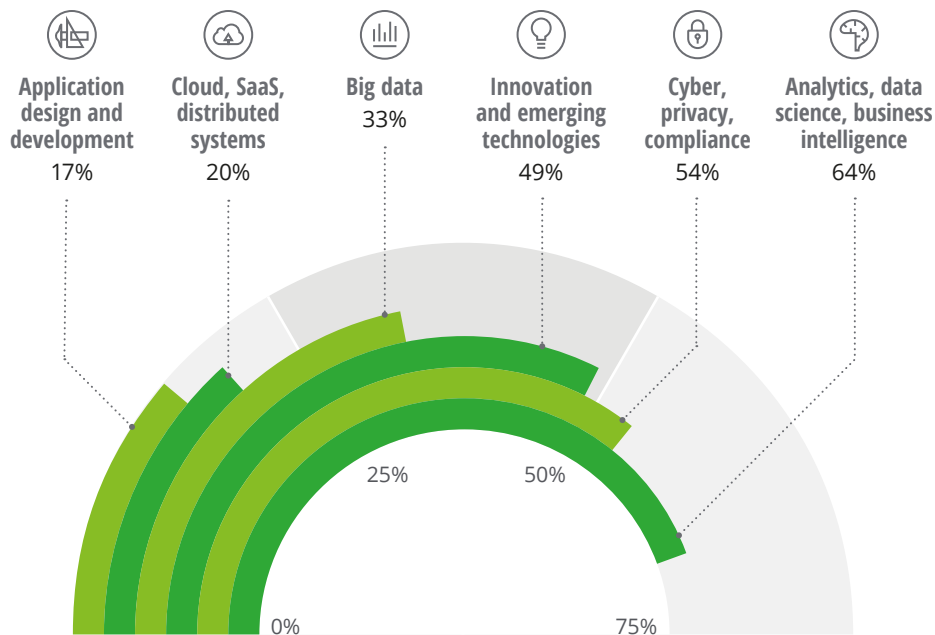
Sysco Corp. CTO Wayne Shurts described today’s IT talent as “technology athletes—people who are curious and always looking to solve business problems through technology.” They have the intellectual and interpersonal strengths, flexibility, and drive to adapt and excel in environments of shifting business demands with an accelerating flow of new technologies.

CIOs are hardly new to talent shortages, but to support the business mandates for innovation/growth and business transformation, they’re likely looking for a new combination of skills. Technical expertise—especially in new and emerging technologies—remains critical, but many savvy IT executives today see a growing need for augmenting that expertise with the soft skills needed to collaborate with the business.

FIGURE 15

### CIOs are looking for IT talent with technical expertise in cyber, analytics, and emerging technologies

Which IT skills will be the most difficult to recruit for in the next three years?  
(Please select all that apply)



N=975.  
Source: 2018 Deloitte global CIO survey.

When asked which IT technical skills will be most difficult to fill over the next three years (see figure 15), CIOs identified analytics and data science, followed by cyber and emerging technologies and innovation.

While many CIOs seek scarce technical expertise, they also need people with communication and interpersonal skills, which can be difficult to find in STEM-trained talent (see figure 16). As they make hiring decisions, CIOs surveyed expect three soft skills to be significantly more important than others:

- **Creativity.** IT talent will be needed to design products, services, and solutions that address business issues, develop engaging user experiences, think creatively to solve thorny business problems, and brainstorm innovative business ideas.

- **Cognitive flexibility.** Today, the half-life of a learned skill is five years.<sup>7</sup> For IT talent, the ability to see different perspectives, learn new skills, and adapt to change will be increasingly critical.
- **Emotional intelligence.** To effectively collaborate and influence people across multiple business functions, IT staff will need to manage interpersonal communication and relationships. Earlier research found IT leaders lacking in this ability, compared to leaders in other functions.<sup>8</sup>

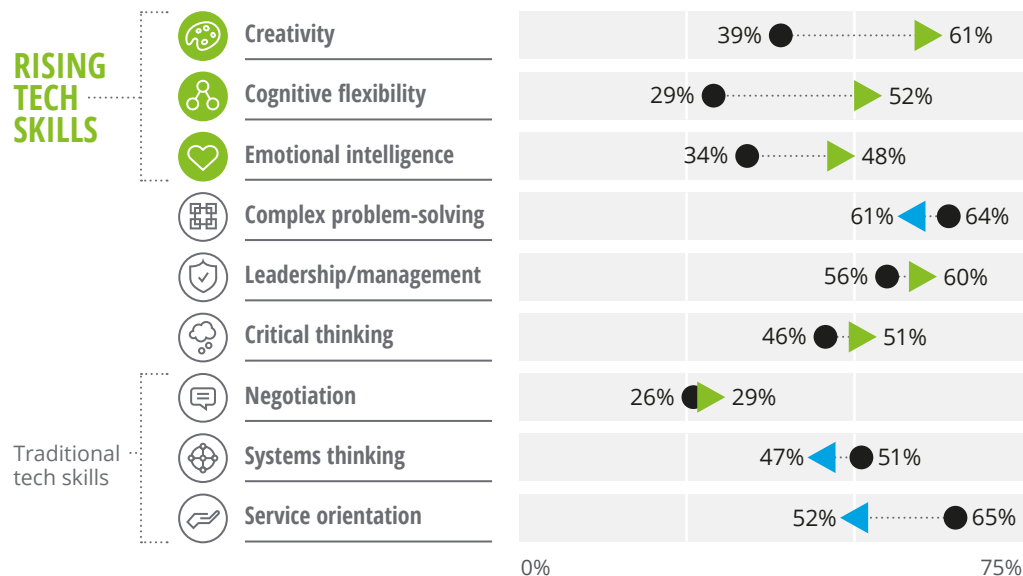
Service orientation—a skill traditionally highly valued in IT—is the skill that CIOs surveyed expect to decrease the most in importance. Today, 65 percent of them hire for this skill, but only 52 percent expect to look for it in the future. Other traditional skills—including complex problem-solving, leadership, and critical thinking—will continue to be valued.

FIGURE 16

## CIOs point to a growing need to augment technical expertise with soft skills required to collaborate with the business

What are the most important IT talent soft skills that you plan to hire for your team (currently and in three years)?

■ Current skills ■ Skills in three years: Increase ■ Skills in three years: Decrease



N=980.

Source: 2018 Deloitte global CIO survey.

In response to these changes, many CIOs are spending millions of dollars to revamp their workforces, employing multiple strategies to attain the needed skill sets. Fifty-eight percent report they are leveraging talent from external partners and service providers; the same percentage say they are retraining and retooling current talent. More than half (56 percent) are focused on hiring experienced talent, while only 36 percent report focusing on hiring fresh college graduates.

**“To reinvent our organisation through technology, we need to ensure that our culture enables and promotes the reinvention of our IT talent as people and professionals. Otherwise, we cannot transform.”**

— *Reginaldo Pereira da Silva, IT director, Thermo Fisher Scientific*

### Breaking the culture code

The top IT workforce challenge is finding and hiring talent with the appropriate mix of technical and soft skills; 60 percent of survey respondents

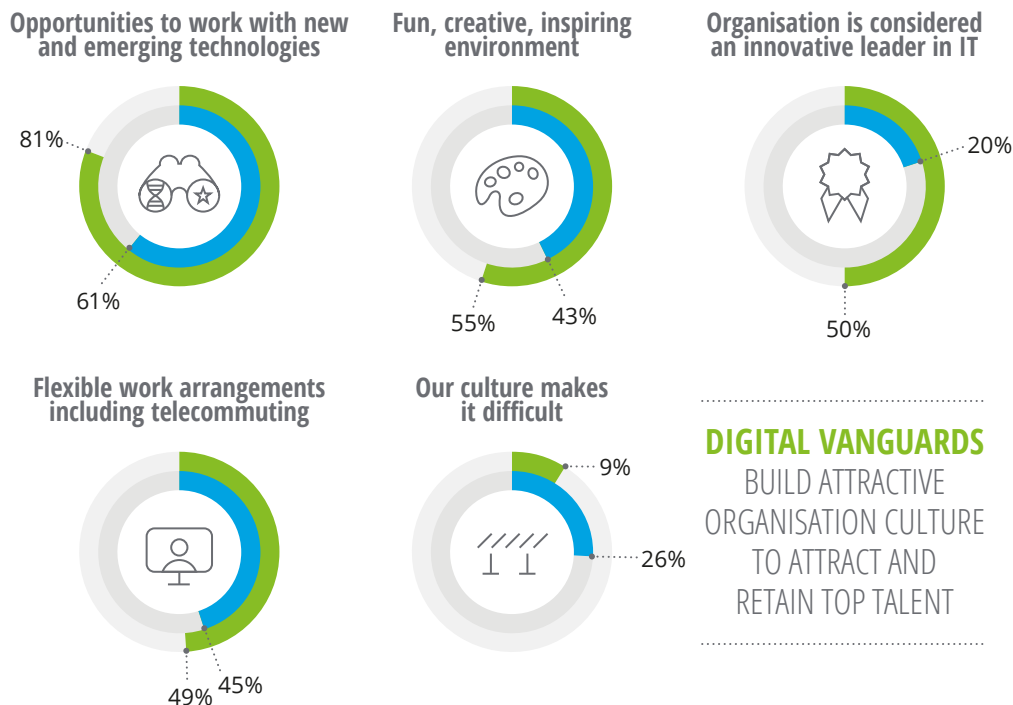
report difficulty finding this balance. Other common challenges are training for new skills and tools (52 percent) and managing and motivating the existing workforce (48 percent).

FIGURE 17

### Organisational culture is fundamental in attracting and retaining top IT talent

Which of the following aspects of your organisation’s culture help attract and retain IT talent? (Please select all that apply)

■ Digital vanguards ■ Baseline organisations



**DIGITAL VANGUARDS**  
 BUILD ATTRACTIVE  
 ORGANISATION CULTURE  
 TO ATTRACT AND  
 RETAIN TOP TALENT

N=898.  
 Source: 2018 Deloitte global CIO survey.

Digital vanguards are betting on culture as a talent magnet. Only 9 percent see culture hindering their talent recruitment and retention initiatives, compared to more than a quarter of baseline organisations that see culture as an HR hurdle (see figure 17). They also credit opportunities to work with new and emerging technologies as the leading attribute that helps them attract and maintain talent (81 percent versus 61 percent of baseline organisations). Reputation is the most significant talent differentiator between digital vanguards and baseline organisations: Half of digital vanguard CIOs indicate that stature as a tech innovator helps them attract and retain talent, compared to only 20 percent of baseline organisations.

Salary and culture are important in attracting millennial talent, according to the 2018 Deloitte Global Millennial Survey, which found that their top job priorities are salary (63 percent), positive culture (52 percent), and a flexible work environment (50 percent).<sup>9</sup> “When looking to recruit and attract top IT talent, you can’t have a policy to hire in the middle of the salary range,” says George Conklin, SVP and CIO of CHRISTUS Health. “You also can’t have a culture of resistance to change and fear of failure. Because then you also have to be OK with mediocrity and stagnancy.”

Easier-to-replicate attributes, such as flexible work arrangements and a fun environment, are important but less of a differentiator for our respondents when it comes to attracting and retaining IT talent.

## Future of work

CIOs need a sustainable talent strategy and can apply three recommendations from Deloitte’s ongoing research on the future of work:<sup>10</sup>

- **Emphasise human-machine collaboration, not competition.** Look for opportunities

to automate and augment existing IT work, beginning with areas that are currently more expensive and less productive.

- **Place strategic longer-term talent bets.** Identify the most important value chains that IT will support. Areas such as marketing, distribution, and customer experience often deliver a competitive advantage for companies; investments in IT talent to support these functions could generate a huge business impact.
- **Show how the business is engaged in a broader societal impact.** Millennials and Generation Z workers look for employers to play a positive role in addressing some of society’s most pressing issues.<sup>11</sup> Highlighting the company’s positive social impact can help attract young IT talent.

## Building a winning team

In sports, coaches and general managers often take years to build a winning team. They seek to fill a diverse set of professional capabilities, interpersonal skills, and backgrounds. Likewise, a proficient team of technical athletes won’t come together overnight.

CIOs can expect a transition period during which IT continues to rely on the deep knowledge of specialists as traditional technologies are modernised. Existing IT workers likely will require time and training to gain experience in the digital technologies that will drive the business future. And many IT staff will require new interpersonal skills to evolve from diligent order-takers to effective collaborators and business problem-solvers.

Meanwhile, CIOs should be on the lookout for a wide range of new talent—not just technical superstars but those workers who bring diverse backgrounds and skills and have the potential to become tomorrow’s business cocreators and change instigators.

### DIVERSITY AND INCLUSION MATTER

Many CIOs are investing in diversity and inclusion programmes, recognising that promoting diverse experiences and inclusiveness are key in winning the talent war. Eighty-seven percent of CIOs say they have an authentic commitment to diversity and inclusion, and more than half of US CIOs surveyed (58 percent) say they have formal initiatives in place to promote workplace diversity and inclusion (see figure 18).

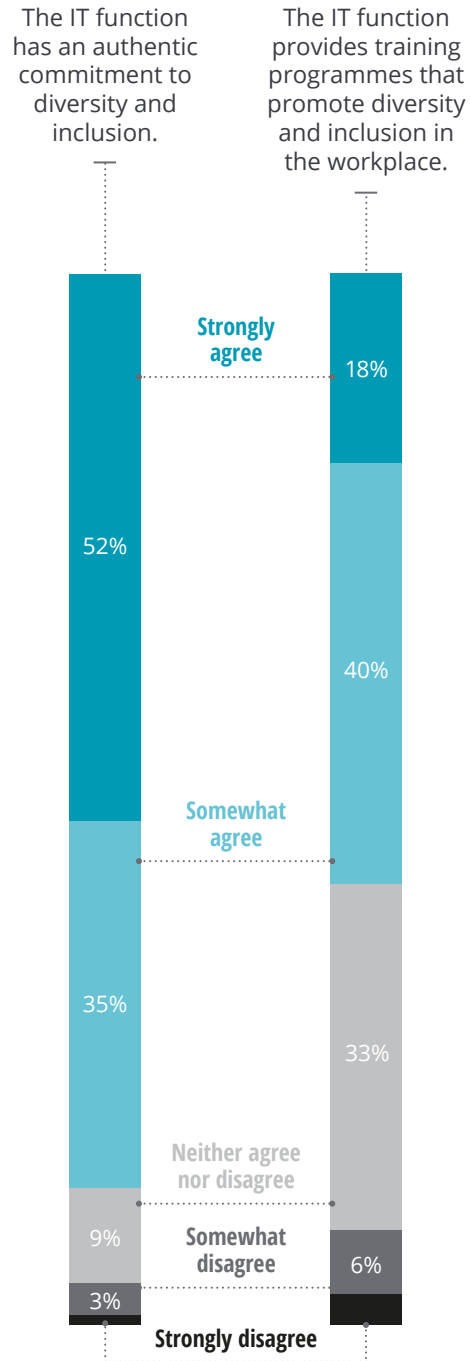
Research has shown that diverse workforces with talented women, underrepresented minorities, and members of other underrepresented groups deliver better results.<sup>12</sup> For example, diverse companies are more likely to capture new markets and increase market share than nondiverse companies, and employees of diverse teams are more likely than others to take risks, challenge the status quo, and productise ideas.<sup>13</sup>

Cultivating diverse teams and leadership pipelines may also help CIOs battle the ongoing shortage of technical talent.<sup>14</sup> Millennial and Generation Z workers admire companies perceived as having diverse workforces and senior management.<sup>15</sup> Leveraging this appeal can help attract young digital natives who are comfortable with new and emerging technologies.

By promoting diverse experiences and inclusiveness, CIOs can gain an edge in attracting and retaining high-performing IT talent and building teams that can better enable their organisations to compete in the digital era.

FIGURE 18

### CIOs are committed to fostering diversity and inclusion, but some still have work to do



N=898.  
Source: 2018 Deloitte global CIO survey.

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## SECTION THREE: LOOK BEYOND

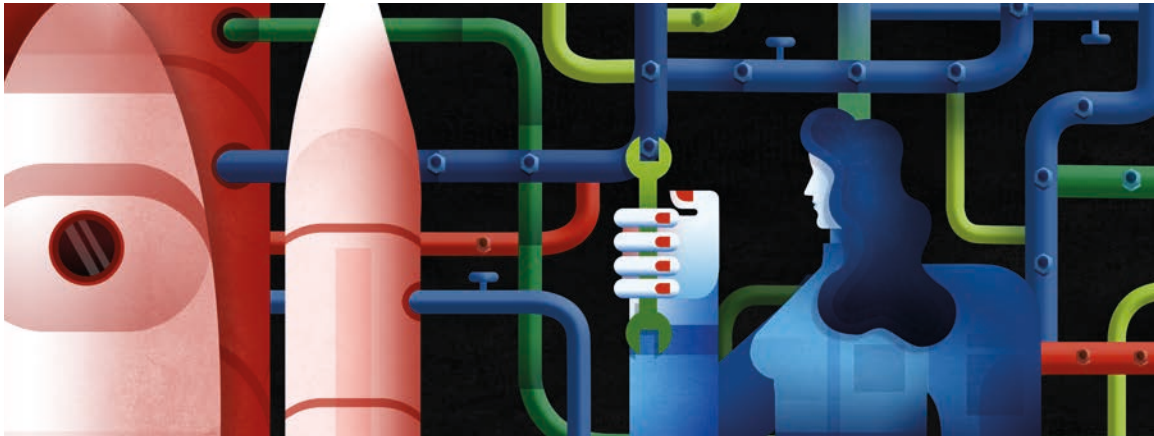
C-suite executives often focus on the shiny side of digital: new technologies that can transform customer experiences, drive product innovation, and boost business performance. But these likely represent only the tip of the digital iceberg.

CIOs need to consider identifying and understanding what is below the surface. Core technologies serve as a foundation for a business’s digital strategy. And a deliberate, systematic approach to innovation can enable the business to proactively harness disruptive capabilities.

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### CHAPTER FIVE

## Strengthen the core



IF YOU EXERCISE using weights, you’ve no doubt heard a trainer’s advice to strengthen your core: Without a stable core, you can have trouble completing even one deadlift regardless of your leg and arm strength. The same can be said of digital and

emerging capabilities—without a strong technology stack, they may struggle to reach their potential.

When we asked CIOs which technology areas will have the most impact on their businesses in the next three years, most selected front-end technologies:

digital, data and analytics, and emerging technologies (see figure 19). But many also recognised that these initiatives should be built on a strong technology foundation that incorporates cyber, modernised legacy systems, and cloud computing.

## Safety first

Cyber has generally become shorthand for security and privacy, topics that can discomfit even the most seasoned executives. Many organisations maintain a reactive stance to cyber; resources are

focused on protection and prevention, realised through enforcement of compliance to standards, policies, and implementation patterns.

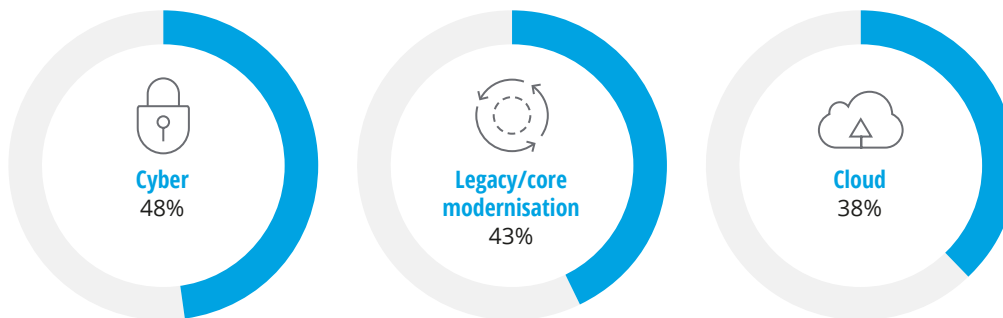
Yet many organisations still view security and data privacy as an operational expense (see figure 20). Only about half of those surveyed say their organisations treat security as a strategic investment that is needed to protect business-critical operations or personal information. Digital vanguards—perhaps because they are further along in their digital journey—are more likely than baseline organisations to view cyber as a strategic asset (57 percent versus 49 percent).

FIGURE 19

### CIOs recognise the need to balance investments across front-end technologies and a core technology foundation to deliver impact

Which of the following technology areas will have the most impact on your business in the next three years? (Please rank your top three.)

#### CORE BUILDING BLOCKS



#### FRONT-END TECHNOLOGIES



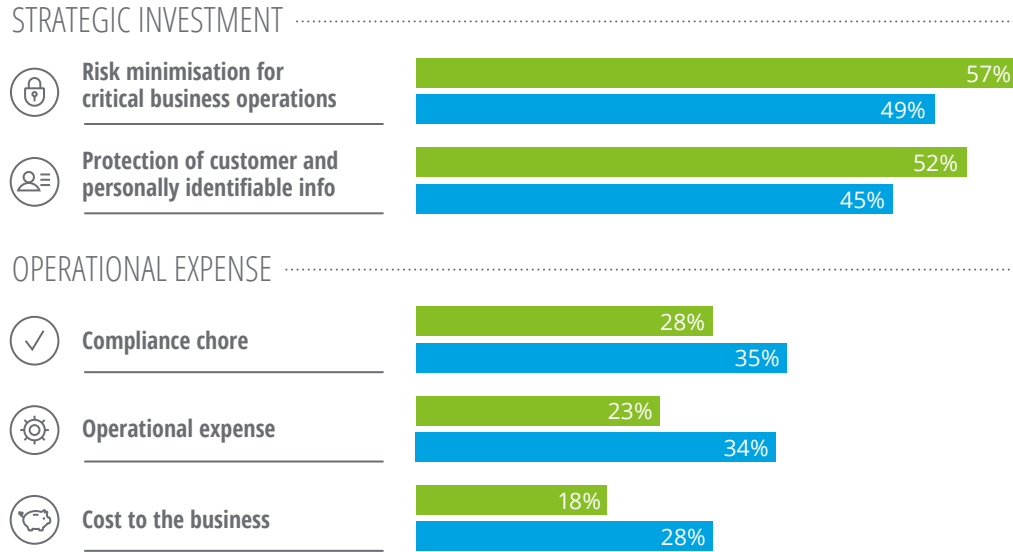
N=858.  
Source: 2018 Deloitte global CIO survey.

FIGURE 20

## Baseline organisations continue to view cyber as a business cost, compared to digital vanguards, which view cyber as a strategic asset

How does the organisation generally view security/privacy investments? (Please select all that apply.)

■ Digital vanguards ■ Baseline organisations



N=835.

Source: 2018 Deloitte global CIO survey.

However, this doesn't mean that organisations are turning a blind eye to security and the broader topic of risk; most CIOs (53 percent) report that cyber topics were discussed at their most recent meetings with the board. And 69 percent of respondents report having a very good or complete understanding of cyber-related changes and investments needed for digital initiatives. "It's hard to measure the value of cyber prevention," says Dave Naisby, CIO of the Commonwealth of Pennsylvania's Employment, Banking, and Revenue Delivery Centre. "However, once you get people to recognise the potential consequences, they understand the need to invest in it."

A more strategic view is likely needed, evolving beyond cyber to involve other dimensions of "risk"—including regulatory and compliance, operational risk, financial risk, and even reputational risk. This last piece hints at an emerging topic of tech ethics

as well as the ongoing debate on the social impact, ethics, and morality of technology adoption.

Containing risk is no longer just an operational concern—it's a board-level business issue and strategic imperative for many organisations. Stakeholders at all levels should understand the opportunities and risks associated with digital initiatives. Leaders should proactively balance protecting the organisation with adopting new business models and strategies.

## Upgrade to a high-performance infrastructure

Many CIOs recognise that their legacy systems lack the agility needed to innovate and scale. Most (64 percent) are rolling out next-generation ERP or modernising legacy platforms to address the



limitations of existing systems. “If you don’t have high-performing infrastructure, then forget about projects and initiatives,” says Mike Tartakovsky, CIO of the US National Institute of Allergy and Infectious Diseases. “No one will trust you without solid infrastructure—that’s the core.”

Compared to baseline organisations, fewer digital vanguards (47 percent) are focused on ERP, perhaps because they have completed foundational investments. Digital vanguards are also less likely than baseline organisations to be involved with supply chain and finance transformation (see figure 21).

Many CIOs are confident in their ability to drive legacy modernisation efforts; 65 percent report a good or complete understanding of the changes and/or investments required. However, as enterprise leaders, CIOs should consider extending their understanding beyond implementation to applying the modernised infrastructure to support enterprise growth and business transformation.

**“To create a competitive edge, we’re looking beyond our own four walls and working with our product teams to determine how analytics and other emerging technologies can be applied to new products and services for our end customers.”**

— *Johnson Lai, CIO, NuVasive*

## Embrace cloud

Business acceptance of all things cloud is likely a significant driver of digital transformation, and it’s growing. Ninety percent of CIOs report that their organisations use cloud computing. This is just the beginning: They expect cloud investments will double as a percentage of IT spend over the next three years, leaping from 22 percent to 44 percent. Nearly one-third of CIOs (32 percent)

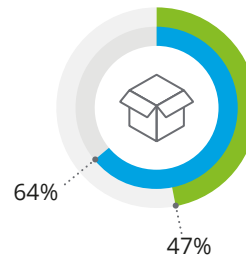
FIGURE 21

### CIOs should consider moving beyond ERP implementations when looking at core modernisation efforts

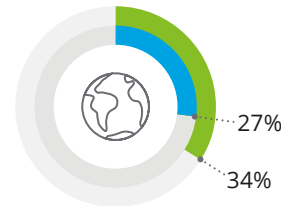
What are the primary focus areas of enterprise platforms within your organisation?

■ Digital vanguards ■ Baseline organisations

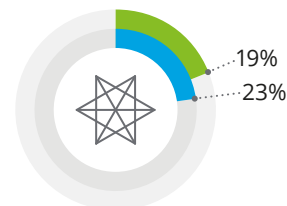
#### ERP/package implementation



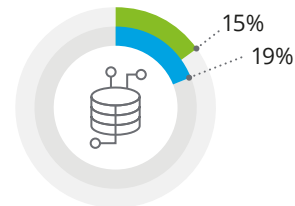
#### Global business services



#### Digital supply networks



#### Digital finance



N=483.  
Source: 2018 Deloitte global CIO survey.

report using cloud infrastructures for critical business applications.

Scalability (75 percent) and business agility (72 percent) remain the primary drivers for cloud adoption (see figure 22). While CIOs in past surveys expressed concern about protecting business data and operations in the cloud, their worries appear to be dissipating. Thirty-four percent of those surveyed now see cloud as a way to *enhance* security.

For many CIOs (44 percent), cost reduction is a primary motivation for cloud adoption. In one-on-one interviews, though, many CIOs cautioned that without appropriate governance processes to oversee enterprisewide cloud spending, total cost could actually increase. This is a real concern; according to our survey, only about one-fifth of CIOs say their organisations have structured processes for measuring the impact of technology investments.

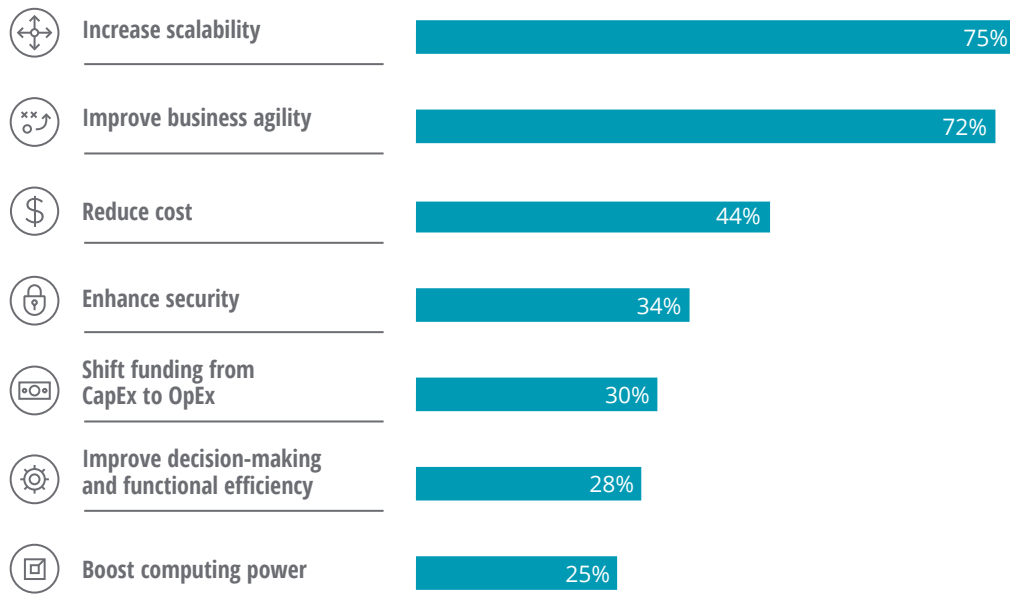
## Balancing act

To support digital, CIOs should consider balancing investments in both front-end and back-end systems. The business case for standalone back-end investments can be a hard sell, but increasingly, there is a common understanding that companies must invest in core technologies such as cyber, modernised core systems, and cloud to support their digital ambitions. As such, investments in these core technologies should not be viewed as standalone expenses but, rather, should be tightly and strategically integrated with investments in customer-facing digital technologies.

FIGURE 22

### Cloud offers scalability and agility—but can lead to cloud sprawl

What are the primary reasons for using cloud technology? (Please select all that apply.)



N=835.

Source: 2018 Deloitte global CIO survey.

## CHAPTER SIX

# Industrialising innovation



**N**EWTON SITS UNDERNEATH an apple tree. Archimedes soaks in a bath. Einstein daydreams at his patent office desk. History is spiced with *Eureka!* moments when human understanding leaps forward.

Thomas Edison chose a more deliberate approach: Rather than waiting for lightning to strike, he saw innovation as a replicable, continuous process. His facility in Menlo Park, New Jersey, was the first industrial lab specifically designed to produce a continuous stream of commercially viable technology innovations built on new and emerging technologies.<sup>16</sup>

Of course, the pace of technology innovation today—and its impact on business—is exponentially faster than in Edison’s industrial age. But modern businesses can learn from the spirit of his model by approaching innovation as an ongoing

operation designed to learn, prioritise, experiment, and scale technologies that can transform business and society.

## Awaken imagination

Many CIOs are waking up to new digital technologies’ potential impact on the enterprise. In 2016, only 17 percent of CIOs expected emerging technologies to have a major impact on their businesses within three years; that number has more than doubled to 40 percent (see figure 23). They expect to make substantial investments in artificial intelligence (AI), machine learning, Internet of Things, and robotic process automation. CIOs in digital vanguard organisations plan to pursue AI and machine learning far more aggressively than

**“IT has to innovate or die. Technology is moving at warp speed while humans move in a more linear fashion, so innovation is key. And to innovate well, we have to think about business through a digital lens.”**

— *Sara Mathew, board member, Campbell Soup Company*

those in baseline organisations, perhaps because they have a solid foundation that allows them to increase the impact of these emerging technologies (see figure 24).

But how can CIOs help ensure that these technology bets will generate the return on investment expected by the business? And how can they stay ahead of the ever-accelerating stream of new technologies?

## How to build a better lightbulb

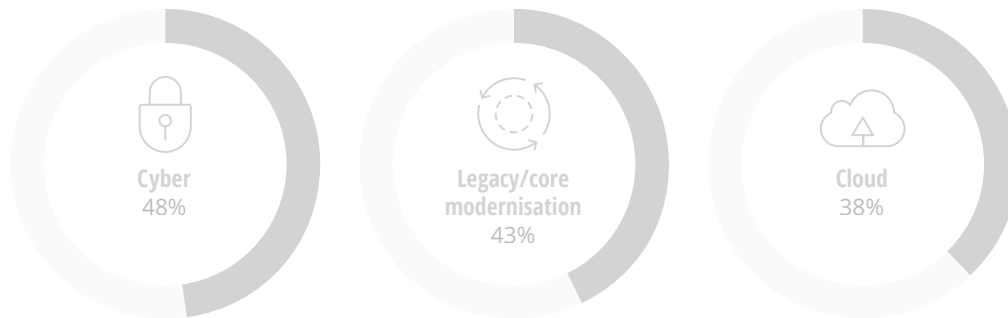
Many organisations are pursuing innovation with a shotgun: dabbling in emerging technologies without thinking through use cases and scalability, spreading investments across multiple startups without a broad strategy, or relying too heavily on their traditional ecosystem of partners and vendors for guidance. Few—if any—have implemented a disciplined, end-to-end innovation programme that

FIGURE 23

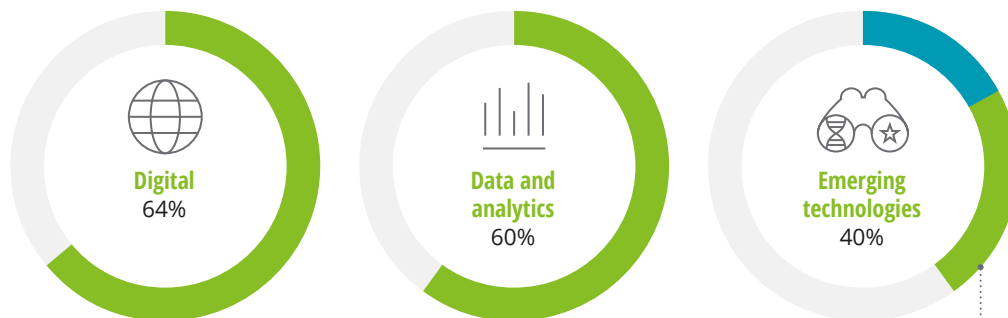
### CIOs are focused on emerging technologies as a key to delivering future business impact

Which of the following technology areas will have the most impact on your business in the next three years? (Please rank your top three.)

#### CORE BUILDING BLOCKS



#### FRONT-END TECHNOLOGIES



**135%**

INCREASE FOR EMERGING TECHNOLOGIES  
OVER THE 2016 SURVEY—FROM **17%** TO **40%**

N=858.  
Source: 2018 Deloitte global CIO survey.

generates an ongoing stream of new potential technologies and use cases with meaningful business context that can scale across the enterprise.

A formal programme that brings in other parties can show real results. “Engaging constructively in a win-win way with ecosystem partners is critical and is going to continue to translate into real competitive advantages for our organisation,” says Blackrock Closed-End Mutual Funds board member Catherine Lynch.

Answering the following questions can help CIOs create a deliberate, repeatable, and scalable innovation process across four dimensions:

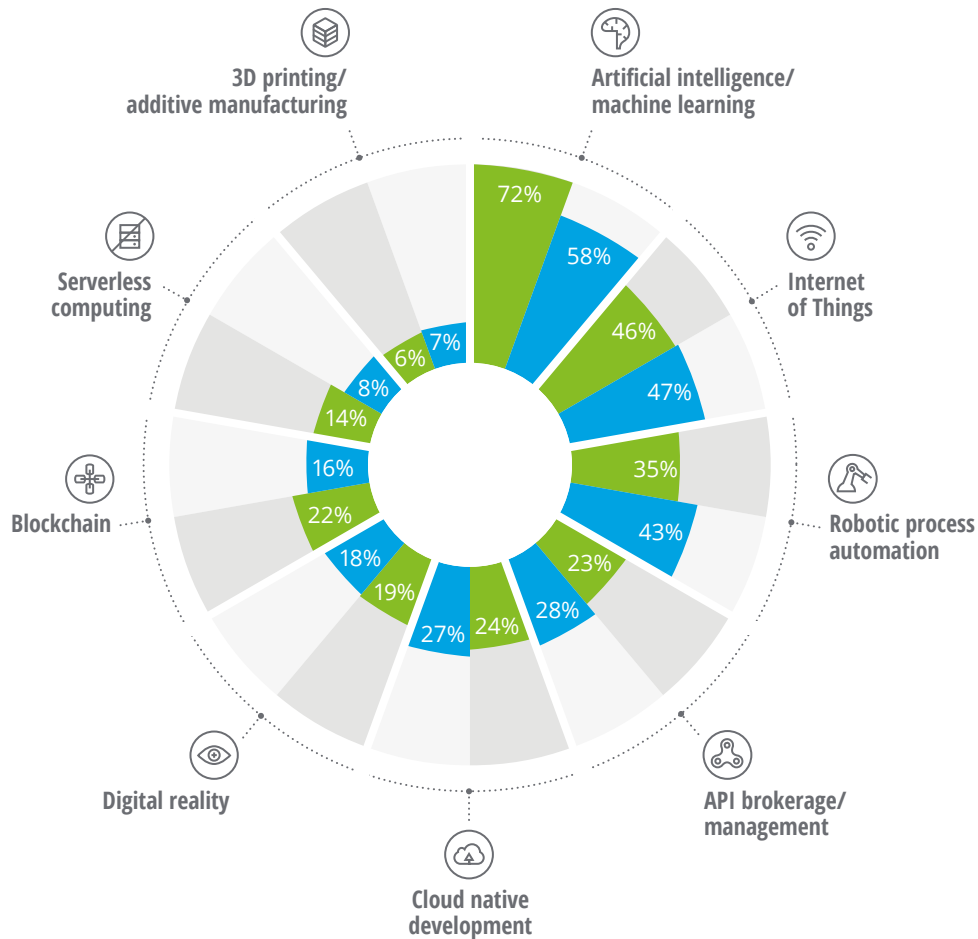
- **Sense, scout, and scan: What’s happening?** Develop a broad awareness of technology advances in the marketplace, and identify important players. Look beyond traditional industry boundaries to identify ideas and perspectives; keep an eye out for potential

FIGURE 24

### AI, Internet of Things (IoT), and robotic process automation (RPA) are at the top of CIOs’ emerging technologies wish list

Which of the following emerging technologies do you anticipate investing in significantly in the next three years? (Please select up to three.)

■ Digital vanguards ■ Baseline organisations



N=803.  
Source: 2018 Deloitte global CIO survey.

competition in adjacent domains. Follow current developments in grants and patents, government research, acquisitions, and venture equity.

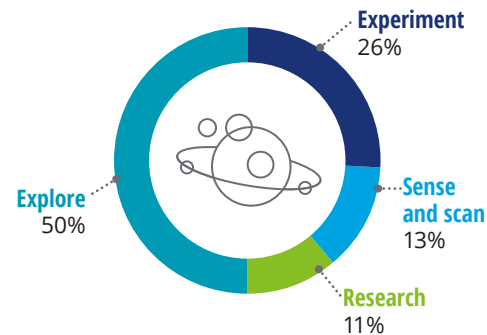
- **Research: What's possible?** Sort out technologies that could translate into potential business opportunities. Uncover what others are doing, both within and beyond your industry. Discuss ideas—big and small—for applying these technologies to launch new offerings, enhance competitiveness, reduce cost, and/or improve efficiencies for your enterprise. Understand the viability of particular solutions in your business environment, and identify stakeholders that could sponsor an initiative.
- **Explore: What's valuable?** Develop potential business use cases. Prioritise ideas that are worth moving into the experimentation stage and build initial prototypes. If the business case fulfills expectations, you may have found a winning innovation. At this stage, strong governance is needed to weed out ideas that are out of sync with corporate/digital strategy—and to define appropriate stakeholder alignment, accountabilities, and success measures.
- **Experiment: What's viable?** Time to roll up your sleeves. Move beyond concept proving and into real-world prototypes. Rapid iteration can help teams efficiently determine what's feasible in the real world. What challenges will need to be overcome? What's the value proposition beyond the original conceit? What will it take to scale at an enterprise level? (See figure 25.)

Even with a solid business case and encouraging experiments, the innovation likely will need to be thoroughly tested and shown to be scalable. Some companies have established innovation centres separate from the core business and staffed with dedicated talent with incubation and scaling expertise. These centres can reduce enterprise risk by enhancing, testing, and solidifying the concept before moving the innovation into production. Others are using innovation hubs and corporate-backed venture outposts to sense, scan, research, and explore potential ideas. “We are moving to a world where we need to

FIGURE 25

### Few CIOs have implemented a deliberate, end-to-end process to demonstrate the impact of technology-led innovation

What is IT's role in the innovation, adoption, and exploration of emerging technologies?



N=809.

Source: 2018 Deloitte global CIO survey.

maximise the velocity of responding to emerging changes and trends,” says former Commonwealth Bank of Australia CIO David Whiteing. “And in this world, experiments are more important than expertise. It's not easy to predict and make bets on emerging technologies, but iterative experimentation, a good model for interpreting market signals, and the ability to anticipate where things are going can help organisations pivot and change.”

As companies embark on building this new capability, a consistent, well-structured process can facilitate the flow of ideas and experimentation while encouraging the applicability, scalability, and alignment with business strategy. Otherwise, allowing innovation and ideas to thrive in ad hoc environments and individual business silos can lead to chaos and make prioritisation, funding, and governance more challenging.

### Are you prepared to make your mark?

So where do CIOs fit into this vision of deliberate technology-driven innovation?

In many ways, business leaders already hold high expectations for IT to lead the way forward. CIOs of baseline organisations report that business leaders expect IT to understand market trends (72 percent), determine business use cases (62 percent), develop prototypes (48 percent), and identify ecosystem partners and vendors (46 percent). Business expectations for digital vanguards were only slightly higher (see figure 26).

This is where a well-prepared CIO can step up as a business partner and cocreator to inspire, envision, and rationalise digital innovation. Effective innovation leaders will likely have already done the hard work to prepare for this opportunity by:

- Developing the personal attributes and capabilities needed to shape the future of the business;
- Earning credibility with business peers as a technology interpreter, influencer, and visionary;
- Transforming IT’s delivery model to be agile, responsive, and directly connected to business outcomes;
- Attracting and developing IT talent with the intellect, interpersonal skills, cognitive flexibility, and drive required to excel in an environment of shifting business demands and an accelerating flow of new technologies; and
- Investing in core systems that protect, support, and flex to manifest the business’s digital ambitions for years—perhaps decades—to come.

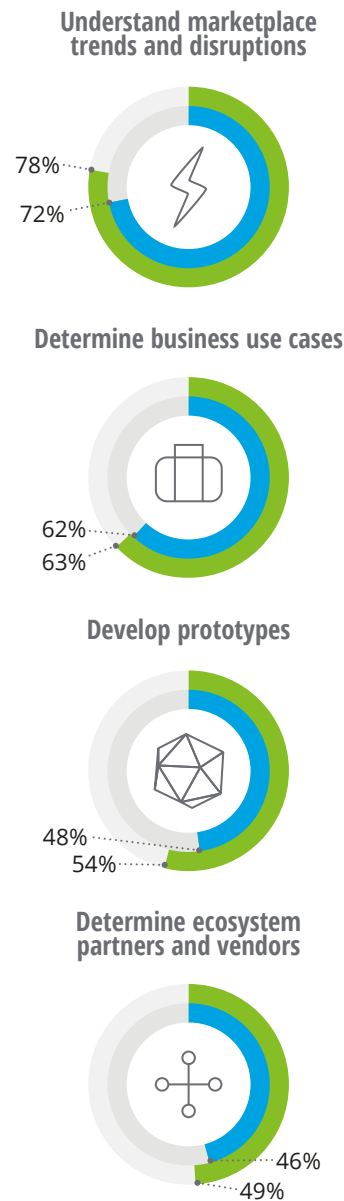
These CIOs are likely ready to initiate—and perhaps lead—the creation of a deliberate approach to bring ongoing innovation into the enterprise and marketplace. Industrialising the innovation process can help CIOs manifest their legacies as business cocreators and change instigators who create hype-free environments where IT teams can test, experiment, and demonstrate value, ultimately enabling enterprises to leverage technology to create business value. Don’t delay; others have already begun looking beyond the current digital era to manifest their CIO legacy.

FIGURE 26

### Business leaders have high expectations of IT to explore emerging technologies, particularly with regard to sensing and researching

What is the business expectation of IT in exploring new and emerging technologies? (Please select all that apply.)

■ Digital vanguards ■ Baseline organisations



N=804.  
Source: 2018 Deloitte global CIO survey.



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Although this is the third and final report in Deloitte's CIO legacy project, we recognise that creating a lasting personal and professional legacy is a lifelong endeavor. To all the executives who participated in this project: Thank you for your individual and collective willingness to explore, develop, and transform your own legacies. You will continue to be an inspiration to future technology leaders throughout the digital era and beyond.

Through our conversations with technology and business executives alike, we were reminded that behind every leader—and every vanguard—is a village of individuals who steadfastly support, mentor, and inspire. Thank you for your many contributions and, more importantly, your perspectives; they are the foundation of how your organisations' successes are manifested beyond the digital era.

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## About this research

This report is the third and final report in the CIO Legacy Project. This research was conducted from January to March 2018 across 71 countries with an aim to better understand the impact and legacy of the CIO role. The research was conducted through in-depth interviews and online surveys. Globally, 1,437 technology and business leaders participated in this research across 23 industry segments. For industry segments, we collected the data at the detailed industry and sector level and aggregated it back to the six major industry categories for easier analysis and for statistical significance. We used advanced analytics techniques, including clustering analysis, as well as descriptive and predictive analysis, and sifted through thousands of permutations of data by looking at cross tabs and variances. We used clustering analysis to segment the respondent population into three CIO patterns and two types of organisations, exploring the differentiating behaviours of each.

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