Information Is Not Enough: The Three "I's" of the New CIO Role

Marc Strohlein   Suya Xiong
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IDC OPINION

For today's CIOs, the "I" in their title can't stand for just information. Information is not enough. Today's CIOs are faced with unprecedented demands to help drive product, service, client experience, and process transformation in their enterprises with an array of powerful technologies. The rise and rapid evolution of the 3rd Platform (cloud, mobile, social, and data/analytics) and innovation accelerators, including artificial intelligence (AI), the Internet of Things (IoT), 3D printing, robotics, and next-generation security, have fueled hypercompetitive and turbulent business environments that make digital transformation (DX) an imperative for business leaders. Yet, for CIOs to be successful in helping drive digital transformation, they must first transform their own roles by expanding beyond traditional business, technology, and leadership areas of focus to include the "three I's" of the new CIO: ingenuity, initiative, and inspiration. The successful CIO of the future will embody these key attributes and be able to harness the power of technology and knowledge to drive exponential individual professional and business outcomes.

IN THIS WHITE PAPER

This IDC white paper discusses the three key elements of the CIO role in the era of digitally driven business transformation and disruption. It provides CIOs, CXOs, and line-of-business (LOB) leaders with facts and insights that explain the need for and the trajectory of the transformational journey. Examining these elements with the forces that are shaping the new role of CIOs can offer hints at how they can navigate such complex times for their organizations. A comprehensive analysis includes strategic topics such as optimizing IT, using cloud and analytics for competitive advantage, and creating digital experiences for differentiation, loyalty, and revenue growth.

SITUATION OVERVIEW

The New Realities of the CIO Role: Challenges and Opportunities in the Digital Era

CIOs are accustomed to change — their very role is about bringing business and technology-driven change to their enterprises. Yet today, CIOs are facing accelerating and more disruptive change shaped as much by technology as by consolidating industries and fickle customers with ever-growing expectations that cast a new reality for the CIO role.

Digital transformation has become an imperative for enterprises and a major focus for CIOs. According to IDC's 2016 *CIO Sentiment Survey,* revenue from digital products, digital channels, or operational

improvements currently represents 27% of the business on average, with respondents expecting this percentage to rise to 33% in three years.

The quest for digital business advantage has spawned the growing recognition by business leaders that digital transformation is not a series of projects or initiatives – it is an enterprise journey driven by continually evolving market conditions and customer needs. CIOs can lead a virtuous innovation cycle within the enterprise to drive a continuous stream of new digital creations, requiring IT teams to continuously transition from old to new, from unstable to stable, and from experimental to operational. Additional major forces that are impacting CIO and IT roles include:

- **Unprecedented change and a lack of steady compass points:** Individual, organizational, societal, geopolitical, technological, and business environment changes are rapid and unpredictable – traditional IT organizations can't achieve and sustain the necessary pace of transformation. According to IDC's Leading in 3D research, only 17% of IT organizations are effective partners in digital transformation, and CIOs ranked "ability to adapt rapidly to changing market conditions" at only 7.3 on a 10-point scale. CIOs and IT executives face their biggest crisis in leadership as they struggle to adjust to the speed and needs of this business transformation.

- **Depleted talent pools:** Talent has always been at the top of the list of challenges for CIOs, according to IDC's *CIO Sentiment Surveys.* Talent pools are being depleted and overwhelmed by demand as digital transformation is increasing the need for diverse talents and skills. The complexities of digital transformation demand new approaches to sourcing talent, technology, and ideas.

- **Loss of budgetary control of technology:** LOB executives increasingly hold technology budgets and talent for digital transformation, and many seek autonomy in their pursuit of digital transformation. Based on IDC's Worldwide Semiannual IT Spending Guide: Line of Business, 62% of technology spending will be funded by LOB organizations by 2019. If CIOs can't offer a viable value proposition, they run the risk of dealing with fragmented and brittle architectures created by disconnected and siloed technology initiatives.
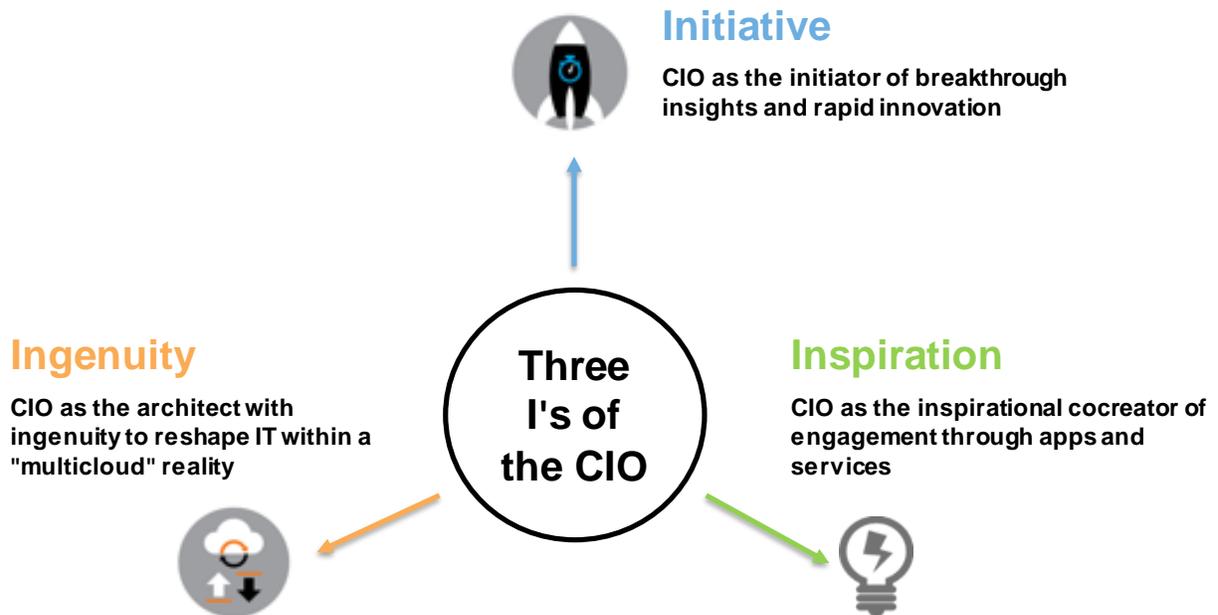
At the same time, CIOs and IT executives have a unique opportunity to expand their leadership and deliver more value to their business. The world is at a major turning point – technology will enable entirely new forms of business operations, new experiences, new industries, new outcomes, and new CIOs who drive change into markets as opportunists of disruption rather than fall victim to disruption.

Transforming the Transformers: The Imperative of the "Three I's"

While the future form of enterprise and IT transformation isn't crystal clear, what is clear is that CIOs need to broaden their role beyond traditional areas of focus – technology, business, and leadership – to three dimensions incorporating the "three I's" of the new CIO: ingenuity, initiative, and inspiration. The three I's are the foundation for the CIO role, now and going forward, supporting the continual digitally fueled transformation, as shown in Figure 1.

FIGURE 1

The "Three I's" of the New CIO Role

Initiative

CIO as the initiator of breakthrough insights and rapid innovation

Ingenuity

CIO as the architect with ingenuity to reshape IT within a "multicloud" reality

Three I's of the CIO

Inspiration

CIO as the inspirational cocreator of engagement through apps and services

Source: IDC, 2017

CIO as the Architect with Great Ingenuity

The technology options available to modern IT organizations are massive in number and variety – not only making it possible to solve almost any business need or problem but also introducing the risk of making unwise decisions with lasting consequences. Adding to the complexity is the fact that many new digital innovations need to be integrated with existing infrastructure, systems, and processes in order to fully exploit their potential, balancing potential with pragmatism. Figure 2 shows how IT executives rate the performance of their IT organizations. Highest-performing categories include integration, reliability, and quality. While reliability and quality are the traditional goals of IT organizations, integration has become a critical focus for IT organizations as organizations integrate innovative digital solutions and pilot projects into the enterprise IT environment. We are seeing a shift as more organizations realize that innovation needs to be harnessed and integrated into their legacy systems and architecture. According to IDC's 2016 *CIO Sentiment Survey,* DX-embracing CIOs are allocating more IT resources to integration, with 35.8% of their workforce being focused on integration. To accomplish this, CIOs need to architect a single platform, bringing all business platforms together as one technology framework to accelerate data intelligence, grow innovation, and create smarter apps and services. The most innovative CIOs are using cloud and cognitive technologies to take it one step further to transform experiences and create new business models to disrupt markets and business ecosystems.

> CIO as the architect with ingenuity to reshape IT within a "multicloud" reality

FIGURE 2

How IT Executives Rate Their IT Organizations

Integration	7.59
Quality	7.53
Reliability	7.53
Overall performance	7.51
Customer satisfaction	7.47
IT satisfaction	7.47
Business value	7.39
Business satisfaction	7.38
Innovation	7.37
Speed	7.26
Culture and morale	7.03

The highest-performing categories include integration, reliability, and quality. While reliability and quality are the traditional goals of IT organizations, integration has become a critical success factor and expectation for IT organizations.

n = 152 IT executives

Note: Mean scores are based on a scale of 1-10, where 1 = not at all good and 10 = very good.

Source: IDC's *CIO Sentiment Survey,* July 2016

The CIO plays a key role in integration by using his or her ingenuity to architect robust, modular, and extensible technology platforms that reshape and transform IT and architect the future.

In addition, CIOs have to rearchitect their organizations for collaboration and knowledge sharing, speed and agility, and more entrepreneurial behaviors driven by customer needs and opportunities. Key functions of the CIO as architect with great ingenuity include:
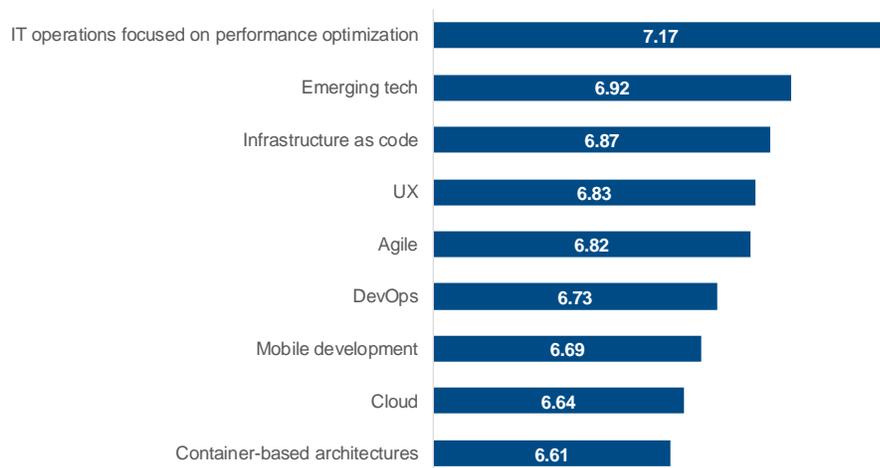
- **Create cloud-based platforms** for enterprise digital transformation and innovation that can set the CIO up for the growing "multicloud" reality in IT, prototyping and rapid development of apps and digital products, and scaling and evolution of those apps and products in response to market and customer changes. According to IDC's 2016 *CIO Sentiment Survey,* 30% of IT executives have already made DevOps part of their automation strategy. Those who can marry DevOps with cloud-based modular, open architectures will lead the pack with flexible and extensible technology solutions while reducing the challenges of technical debt.

- **Ensure cybersecurity inside and outside the enterprise** as digitally enabled products become embedded in homes, businesses, and customers' lives while cyberattack threats escalate. In IDC's 2016 *CIO Sentiment Survey,* respondents said that they spend on average 16.5% of their security resources on digital transformation, more than double that of any other category. 28% of respondents cited business risk as their most important criterion when selecting a development methodology.

- **Create a data strategy and platforms that support innovation and insight** by leveraging legacy data stores, context-driven customer engagement data, and external data including social media, news, geospatial, climate, and other sources.

- **Plan for IT and business processes that use AI** as an aspect of advantage in creating adaptive, self-configuring smart processes that can keep pace with changing business needs.

- **Integrate and broker cloud applications and services** in a way that provides seamless IT services and capabilities to LOB executives. IDC's 2016 *CIO Sentiment Survey* shows that CIOs expect to grow their participation in enterprise cloud implementations from 32% three years ago to 50% in the next three years.

- **Energize and optimize IT organizations** and operations to improve responsiveness and problem-solving efficacy. When respondents were asked to rate what CIOs considered as innovative at their companies, they rated "IT operations focused on performance optimization" highest (see Figure 3).

FIGURE 3

What CIOs Consider Innovative

Category	Score
IT operations focused on performance optimization	7.17
Emerging tech	6.92
Infrastructure as code	6.87
UX	6.83
Agile	6.82
DevOps	6.73
Mobile development	6.69
Cloud	6.64
Container-based architectures	6.61

While over 50% of CIOs surveyed saw innovation as a top priority for their organization, improving the performance of existing operations was still one of their top innovation priorities.

n = 152 IT executives

Note: Mean scores are based on a scale of 1-10, where 1 = not at all innovative and 10 = very innovative.

Source: IDC's *CIO Sentiment Survey,* July 2016

CIO as the Initiator of Breakthrough Insights and Rapid Innovation

As the chief technologists of the enterprise, CIOs play a decisive role in the success or failure of their businesses. Organizations need CIOs who lead by proactively initiating technology-driven business transformation – not just responding to requests from their business peers – and stay ahead of the trends and competition with speed to innovation. According to IDC's 2016 *CIO Sentiment Survey,* 71% of the top revenue performers consider innovation the most important area of focus for IT organizations, while only 31% of low-revenue performers focus IT primarily on innovation. According to the same survey, the top 3 goals of digital transformation for CIOs focus on business and customer innovation aimed at improving operational processes, creating competitive advantage, and developing new products (see Figure 4). The implication is clear that CIOs who inspire and initiate innovation are more likely to perform higher and have more market impact.

CIO as the initiator of breakthrough insights and rapid innovation

All these goals require a strong foundation of data-driven intelligence and insight, coupled with speed and agility, in the delivery of services and solutions. CIOs need to create platforms, capabilities, and strategies to capture the right data and apply the right analytics and intelligence to uncover hidden insights that lead to superior performance and competitive advantage. Moreover, AI and cognitive technologies are evolving quickly, as are data sources and types – IT organizations must harness agile/DevOps practices and culture to deliver continuous value and relevance to the business.

It's important to note that while the majority of the CIOs surveyed saw innovation as a top priority for their organizations, they also recognized that innovation alone is not sufficient for businesses to succeed. Innovation must be integrated and scaled at the entire enterprise level in a way that moves from "idea to cash" and also spawns a continuing stream of further innovation.

FIGURE 4

Top Goals of Digital Transformation

Goal	Percentage
Better operations	41%
Competitive advantage in current business	38%
New products	36%
New market	34%
Improved customer experience	32%
New partnerships with customers	30%
New partnerships with vendors or suppliers	28%
New business models	27%
New geographies	18%
New industries	17%

The top goals of digital transformation for CIOs focus on creating an innovative and digitally competent IT organization to support business growth.

n = 152 IT executives

Source: IDC's *CIO Sentiment Survey,* July 2016

CIOs bring a blend of technology and business knowledge and experience that uniquely positions them to play the initiator role in identifying breakthrough applications of digital technologies to create business opportunities. CIOs also have a key role in taking initiative to accelerate data-driven intelligence and innovation. The CIO role requires a cross-enterprise view and understanding of the business and its customers, their needs, and the array of existing and emerging technologies that can best meet those needs. Some key functions in the role of initiator are:

- **Create data acquisition and management strategies** to drive innovation and performance by uncovering insights and relationships buried in mountains of structured and unstructured data from disparate sources.
- **Help craft new digitally enabled business** and operating models that use emerging technologies including blockchain, augmented reality (AR), virtual reality (VR), artificial intelligence, and robotics to create new ways of generating revenue and opportunities to streamline and add intelligence to business processes.

- **Leverage microservices, cloud, and data/analytics** technologies to build highly modular, extensible, and open platforms and data and service hubs to create and anchor business ecosystems for revenue generation and market influence. Businesses such as Lyft and Tencent that are able to create business ecosystems can scale rapidly and gain significant market influence.

- **Provide business executives with operational, market, and competitive analytics** for predictive and prescriptive analytics-driven strategy creation and decision making. Note that such analytics and intelligence are increasingly becoming key ingredients to customer experiences and engagement as well as traditional business intelligence and decision making.

- **Help create new information- and analytics-driven products and services** including extensions to existing physical products as well as whole new categories of products and services. Manufacturers of vehicles, equipment, and devices are finding new life and revenue streams as they add information-based services to their repertoire of products built for personal and environmental customization.

CIO as the Inspirational Cocreator

Customers and employees have an almost endless variety of possible pursuits and distractions to occupy their time, and one of the biggest challenges *and* opportunities for CIOs is engaging customers and employees with immersive, essential experiences. The genesis of such experiences is the blending and integration of apps, data, and intelligence to create highly personalized, contextual, adaptive, and "smarter" experiences. CIOs have an incredible palette of digital technologies and data to create those apps and experiences — the challenge is to find the right combination. A key element of creating smarter apps and experiences is cocreation that brings together the knowledge and creativity of customers, employees, and partners to go far beyond what could be imagined within the walls of the enterprise. Cocreation is facilitated by agile practices where cross-functional, collaborative development is core to success.

CIO as the inspirational cocreator of engagement through apps and services

Digital transformation is a "team sport" requiring a complex blend of skills, knowledge, governance, and authorities, and CIOs have to be able to inspire a broad range of stakeholders with widely varying attitudes and motivations. Compounding the situation, when CIOs face the challenge of building IT cultures to increase customer-centric thinking and behaviors, most (64%) of them create two cultures — a business-centric culture for staff close to the customer and an IT-centric culture for staff removed from the customer. Only 36% of organizations focus on creating a single culture — both business centric and technology centric — that aims at integration and alignment (see Figure 5). The latter organizations will have a competitive edge in creating products and services that customers want and need.

FIGURE 5

Reshaping the IT Culture

One culture
Business + technology

Two cultures
Business centric or
Technology centric

We have a culture where staff are both business centric and technology centric, aiming at integration and alignment
36%

An IT-centric culture for staff who are removed from the customer and a business-centric culture for staff close to the customer
64%
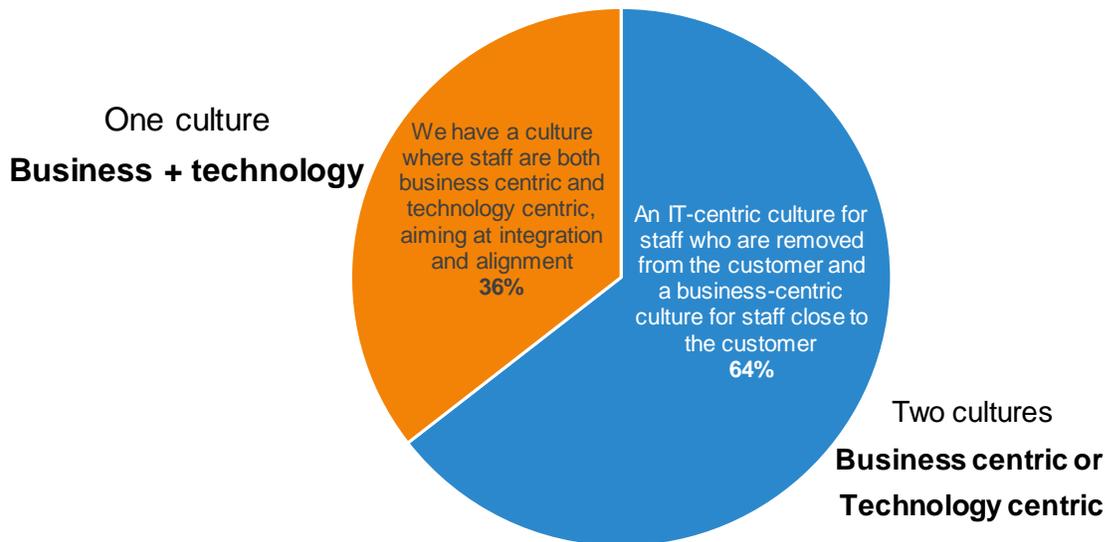
n = 152 IT executives

Source: IDC's *CIO Sentiment Survey,* July 2016

The most successful digital transformers will be CIOs who collaborate with LOB executives and staff, partners, customers, and others to create and execute strategies for smarter apps and services. The days of big companies working alone to dominate markets with their products and services are dwindling. New approaches to rapidly scaling businesses are predicated on using cloud-based platforms to create data- and intelligence-driven ecosystems of businesses, partners, customers, and others to produce interlocking and complementary sets of products, services, and experiences — what was once called "the whole product."

Key functions for CIOs as inspirational cocreators include:

- **Build the hyper-personalized digital front door for employees, customers, and the business ecosystem that can rapidly evolve digital experiences** by blending technologies and data and physical and digital assets. Experiences are the currency of the digital age, and 21% of surveyed CIOs use user experience (UX) design for all IT projects, 16% as the preferred approach wherever possible, and 44% for innovation initiatives. A full 69% of respondents reported that UX design is a strategic initiative headed by a senior IT executive or an LOB executive.

- **Collaborate with LOBs, vendors, employees, customers, and partners to craft engaging enterprise and IT digital visions** that will inspire creativity and superior performance. In their responses to IDC's 2016 *CIO Sentiment Survey,* CIOs included "developing new partnerships with suppliers" and "creating new engagement models with customers" in their top digital transformation goals, underlining the importance of cocreation and partnering (refer back to Figure 4). In selecting vendors, they ranked "bringing solutions" at 6.79 out of 10 and "integrating innovation into the enterprise" at 6.35 out of 10, with 10 being "always required."

- **Serve as a magnet for attracting and retaining superior talent** in an era of severe talent shortages and rapidly changing skill set requirements, using digital and emerging technologies to attract, retain, train, and engage the workforce.

- **Gain relevant market insights to adapt and better shape demands for IT services for both customers and workers** of today and tomorrow. CIOs need to stay abreast of how younger clients and employees engage with their business systems to ensure that resources are focused on the most critical needs of the enterprise. In the past few years, more CIOs and senior IT executives have been involved in reverse mentoring, pairing younger millennials with senior business executives to help them understand how they need to adopt new technologies.

- **Gain cooperation and support from LOB organizations** armed with budgets and technology-savvy leaders who may wish to operate outside the purview of the IT organization.

- **Promote digital transformation efforts with the highest potential business impacts** based on an enterprisewide view. Digital transformation efforts need to be anchored in the enterprise vision and goals, aligning with key KPIs.

FUTURE OUTLOOK

The digital revolution for business is under way. IDC forecasts that worldwide spending on digital transformation will reach more than $1.7 trillion in two years and $2.0 trillion in 2020. The gap is widening between thriving companies and surviving companies. The best performers are leveraging their digital transformation capabilities to create new digital products and services, expand digital ecosystems, and foster digitally savvy workforces. Innovation accelerators – IoT, 3D printing, cognitive systems, robotics, natural language interfaces, and next-generation security – will become common characteristics of these thriving companies. But these technologies alone will not enable organizations to outpace their competition. It will take a concerted effort by leadership, and especially CIOs, to unite and integrate technology and business organizations toward innovation to exploit these new technologies.

The future of IT is multifaceted and follows no predetermined course. Forces shaping IT likewise will continue to change in unpredictable ways. With these changes, CIOs have a unique opportunity to expand their leadership and deliver more value to their business. CIOs have the power and imperative to radically rethink how they can orchestrate and leverage knowledge, technology, and talent for the future of their business, and by doing so, they will tap into where their disruptive power lies:

- **Power of knowledge:** Data is the new basis of competitive advantage – for industries, for companies, and for you.

- **Power of technology:** The cloud is the path to driving digital transformations and new business models.

- **Power of talent:** When exponential knowledge is coupled with the exponential power of technology, the result is exponential outcomes.

CIOs willing and able to expand their role to become true business leaders will be strategic thinkers who develop a business-driven vision of opportunity presented by digital technologies. These evolved CIOs will command a seat at the table for decision making for resources and guiding the organization. These CIOs will have become innovation partners with responsibility and accountability for cloud, big data/analytics, and digital experience initiatives. However, it will also take a clearly articulated vision with a technology path and KPIs to achieve business objectives.
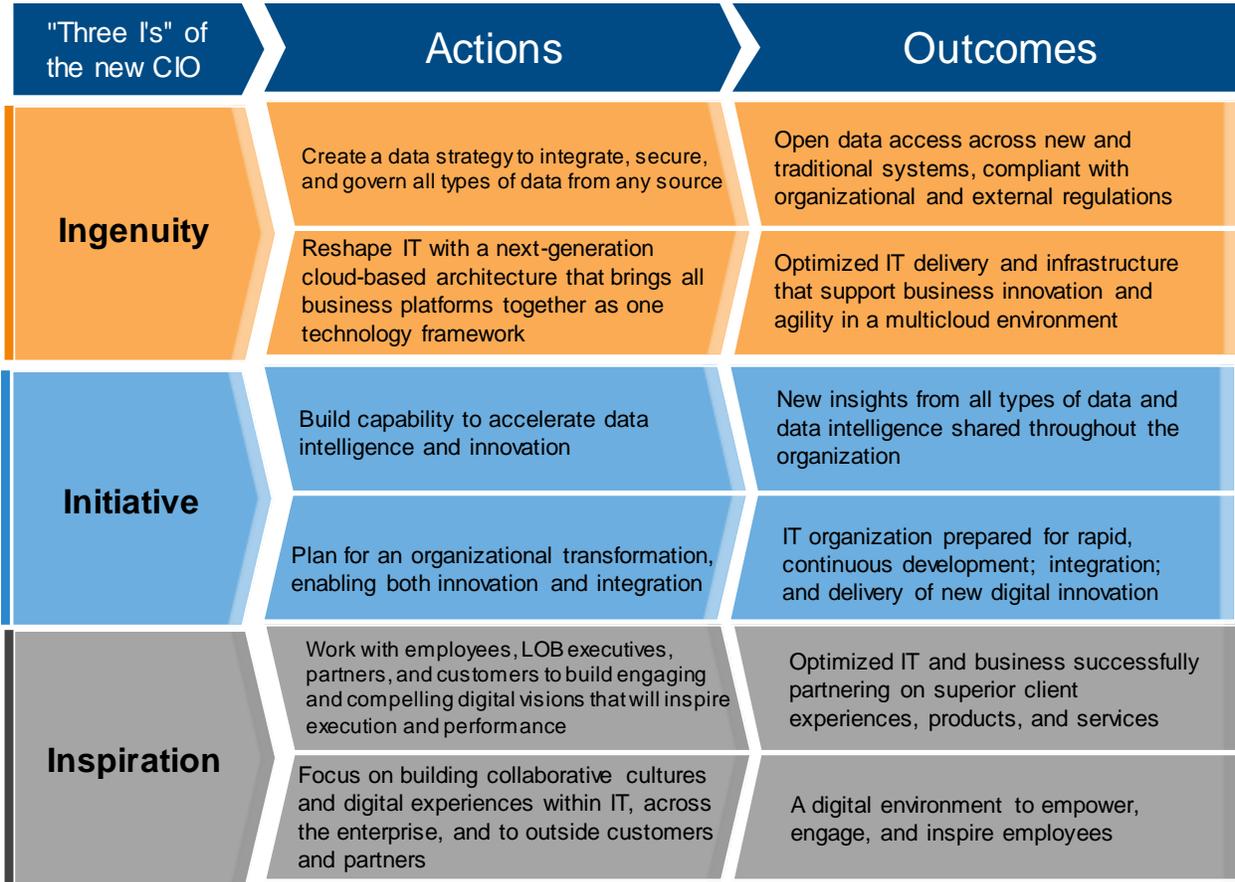
ESSENTIAL GUIDANCE

In the past few years, digital transformation has driven business and market acceleration, creating never before seen hypergrowth and competition. CIOs have the opportunity to change their role from being an operational player to being a strategic partner that helps their enterprises become "digital thrivers." To do so, they need to expand their role and fulfill a new CIO role by incorporating the "three I's" – ingenuity, initiative, and inspiration:

- **Ingenuity:** CIO as the architect with ingenuity to reshape IT within a "multicloud" reality
- **Initiative:** CIO as the initiator of breakthrough insights and rapid innovation
- **Inspiration:** CIO as the inspirational cocreator of engagement through apps and services

In Figure 6, IDC offers essential guidance to help CIOs who want to evolve their role and their organizations and better contribute to the digital transformation of their businesses.

FIGURE 6

Expanding the Role of CIOs

"Three I's" of the new CIO	Actions	Outcomes
Ingenuity	Create a data strategy to integrate, secure, and govern all types of data from any source	Open data access across new and traditional systems, compliant with organizational and external regulations
	Reshape IT with a next-generation cloud-based architecture that brings all business platforms together as one technology framework	Optimized IT delivery and infrastructure that support business innovation and agility in a multicloud environment
Initiative	Build capability to accelerate data intelligence and innovation	New insights from all types of data and data intelligence shared throughout the organization
	Plan for an organizational transformation, enabling both innovation and integration	IT organization prepared for rapid, continuous development; integration; and delivery of new digital innovation
Inspiration	Work with employees, LOB executives, partners, and customers to build engaging and compelling digital visions that will inspire execution and performance	Optimized IT and business successfully partnering on superior client experiences, products, and services
	Focus on building collaborative cultures and digital experiences within IT, across the enterprise, and to outside customers and partners	A digital environment to empower, engage, and inspire employees

Source: IDC, 2017

Methodology

The data in this document is based on IDC's 2016 *CIO Sentiment Survey* of 152 organizations in the United States conducted in July 2016. The survey sheds new light on digital transformation and the critical challenges that IT faces to align with the business in that context.

Note: All numbers in this document may not be exact due to rounding.

Survey Respondent Segmentation

The survey respondents were segmented as follows:

- All respondents were from the United States.
- 37.5% of the respondents were from organizations with 5,000+ employees, and the rest (62.5%) of the respondents were from organizations with 1,000–4,999 employees.
- Respondents were from 14 different industries.
- 26.0% of respondents had the title of CIO or vice president of IT, and 74.0% of respondents had the title of director of IT.

About IDC

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Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-community.com
www.idc.com