The CIO in a World at a Tipping Point

A perspective on the changing role of the chief information officer in the digital age

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Today's CIO Sits at a Tectonic Shift in Technology

We are in the crux of a new age where change is the only constant. Extraordinary technological advances are transforming the very fabric of our society. For the world of business, innovation and transformation have moved beyond an aspirational state and have become a prerequisite for survival.

Correspondingly, the volume of disruptive technologies that can pose existential threats to established business models is on the rise. Robotic process automation and machine learning algorithms have rapidly infiltrated new apps, devices and platforms. And as their ability to parse data grows, expansion of sensor-enabled devices – i.e. the Internet of Things – is supplying the information required to transform factory floors and entire smart cities.

Further complicating the lives of established businesses is the 'Uberization' phenomenon, which is disintermediating businesses built on relationships and silo'd information. This transition is being enabled by cloud-based data lakes that unlock information historically trapped in traditional enterprise infrastructure.

The organizations that can rapidly recognize and adapt their business models to the new environment and market changes, in real-time, will emerge as the winners. Those that are slow risk becoming obsolete. At the fault-line of this great tectonic shift, steering a company through the whirlwind of disruption, is the chief information officer (CIO).

> By 2020, it's projected that over 1 billion connected objects will equip factories – a huge increase from the 237 million objects in place today.

An Evolving Role about to Peak

The role of the CIO has evolved steadily out of the back-office over the years. And now, at the height of the digital revolution, this role is finally taking its place as a true strategic partner to business.

As far back as 2011, IBM had declared the emergence of the CIO as one of the 100 most iconic moments of progress. But it wasn't until recently, when the torrent of data and information has been effectively harnessed to drive large-scale industry disruption

(e.g., "Industry 4.0"), that true technology fluency has become an imperative at the board level.

The vast amounts of data driving this shift bring with it a wealth of untapped opportunities. To capitalize on these opportunities will be the remit of that key person with "information" in their title.

Driving Value Through Data

A core piece of the CIO role is therefore to derive optimum value and insights from the volumes of raw data flowing through an organization to enable better and faster decisions. How a CIO translates these insights into innovation -- and works with the business to scale this into true competitive advantage – will determine which side they play on in the great digital game of disruption.

Traditionally, a CIO's time was focused heavily on cost containment: supporting the business with software and infrastructure in the most cost effective way possible.

Today, however, the IT chief's leadership capabilities, business acumen and strategic perspectives need to be paired with their technical skills. When successful, this confluence of capabilities produces a strategic business advisor balancing efficiency gains with innovation.

Consequently, we see an increasing trend where CIOs are being appointed from the business side of the organization with upgraded titles and portfolios to reflect the new scope of the role. In addition to "chief information officer", CIOs are now also "chief innovation officer" or "heads of business transformation", a phenomenon being referred to as the emergence of the "CIO-Plus."

> "For far too long, CIOs were relegated to a kind of network plumber, expected to figure out how to get all the various data pipes to connect so that the business didn't experience any backlogs, slow leaks or sudden unpleasant puddles of data loss."
>
> **Geoff Webb**
> VP Strategy at Micro Focus
> Forbes technology council contributor

Chameleon Consumers & Fluid Business Ecosystem: A Double-Edged Sword

Until recently, technology was a business enabler. Now, technology is also a business model disruptor. Businesses today operate in a whitespace where established rules are being challenged and rewritten.

Because of this, there has been a decline in the ability of the blunt instruments of capital investment and labor to spur the economic growth required to drive enterprise value. As businesses digitize more of their core functions, the lines between operations and technology get more and more blurred and the lines between technology and product development disappear entirely, forcing a more sophisticated approach to deploying resources.

The accelerated rate of change is being fueled to a large extent by millennials, who literally have the world at their fingertips via their mobile gadgets. These ever-demanding consumers have an unquenchable thirst for the next bigger, better and smarter product.

New Age of Consumer Demand Changes the Game

Shaped largely by Silicon Valley to expect rapid, over-the-air software updates with products that are always connected and constantly improving, consumers today demand products and services to be instantly available through whatever channel they choose. Compounding the challenge to businesses, their preferences are often conflicting and ever-changing, creating a "chameleon consumer" breaching the boundaries of traditional market segmentation.

Social media platforms and online communities like Tripadvisor and Yelp are bringing their voices and needs to the fore, giving rise to a profound trend in the market: the consumer to partner metamorphosis. Not content to be passive voices, consumers are emerging as active co-creators. A great example of this is the open source software Linux, which was brought to life by the user community rather than a tech company.

New Business Models Driving Disruption

New competitors, on the other hand, are cropping up with low-cost digital business models, seizing market share and turning the value chains of established organizations on its head. Mass personalization is the name of the game and companies are under tremendous pressure to deliver novel, bespoke solutions, end-to-end exceptional brand experiences and consistent multi-channel services.

It would be tempting for businesses to follow the 'wait and watch' strategy, letting the disruption play out and then reacting to winning trends. But this approach can be fatal in today's fast-moving digital economy where it becomes very difficult to make up for lost ground. Firms must therefore be agile and adopt flexible operating business models that can react nimbly to market demands, where possible anticipating market trends and consumer needs before they fully emerge.

Evolution of the Enterprise

1930s
PRODUCTION ORIENTATION

1960s
CONSUMER ORIENTATION

2010s
CONSUMER AS DRIVER
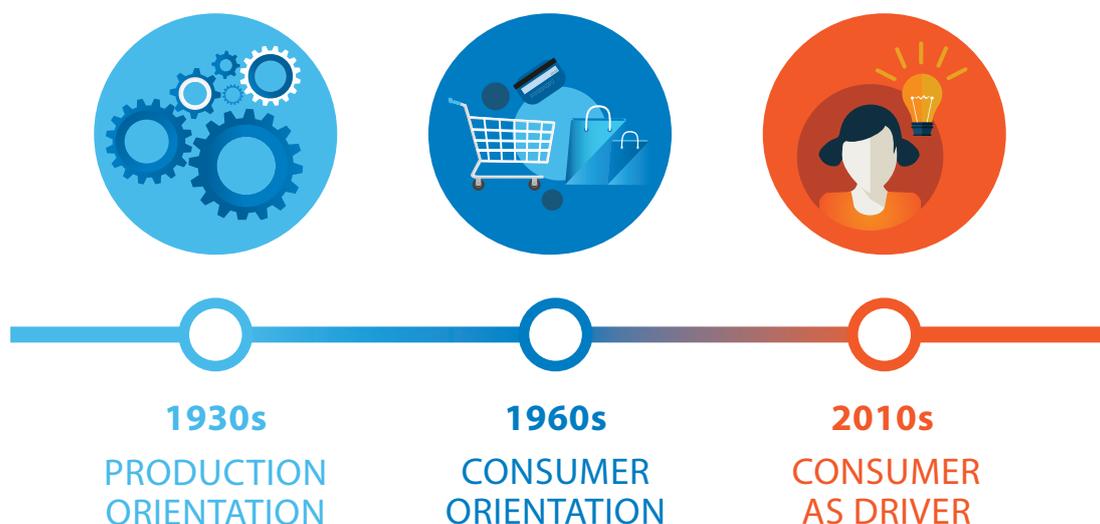
Source: Infosys Consulting, Agile Operating Model of the Future white paper

Decentralization is Driving Innovation

Global organizations today are exposed to regional laws and geographically distinct business models. In a centralized management system where innovation decisions are taken by a central power source, businesses are forced to pick from a narrow range of choices, leading to missed opportunities and poor performance. The resulting lack of distributed autonomy can become a serious impediment to innovation.

To address this, organizations are gravitating towards decentralized innovation management where all employees are encouraged to contribute novel ideas and process improvement inputs. In fact, innovation trailblazers like Google encourage their employees to spend at least 20% of their time on their own ideas. By infusing an agile methodology with a design thinking approach, organizations can supply CIOs with a basket of game-changing innovations to leverage. As an added bonus, employee engagement and collaboration are enhanced in the process.

Innovation Generated Across the Organization Ecosystem
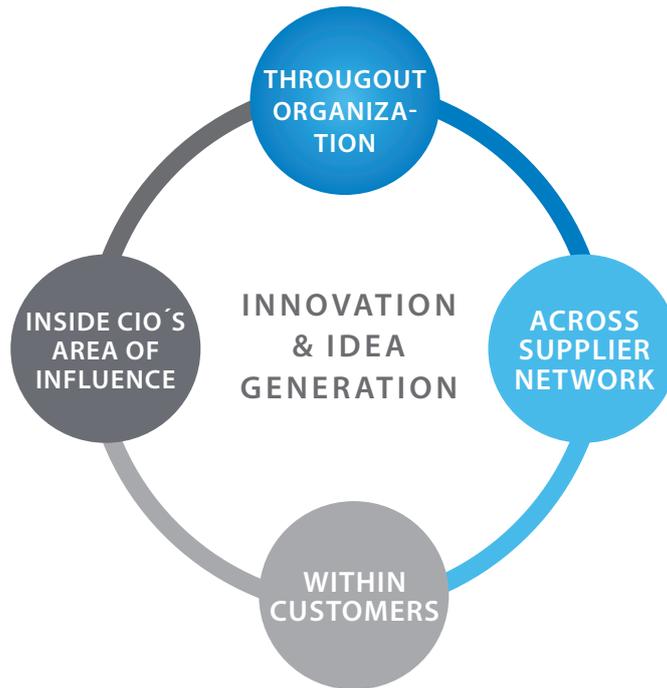
Source: Infosys Consulting

In the new CIO role, the monitoring of these innovations and assessment of their relevance becomes mission critical. The CIO must fine-tune the co-existence of high standardization goals with a broad portfolio of new software. In this multi-modal IT environment – where enterprise, operations and business are interconnected – people are required to be conversant in multiple methodologies.

This places the CIO in a "chief orchestrator" role connecting the dots and the different silos of the business, and synchronizing the movement of traffic on the multi-lane highway.

"A CIO today more than ever needs to be a multi-skilled combination of COO, CMO, and CFO – wrapped into one," according to Dan Albright, a partner and CIO advisor at Infosys Consulting.

Evolution of the "CIO-Plus"

Source: Infosys Consulting

A Paradigm Shift from Bottom-Line to Top-Line

The very core of the CIO's traditional role, managing IT infrastructure and operations, is being reduced as organizations aspire towards a "cloud-first" approach. As evidence of this, cloud revenues are predicted to touch $411 billion by 2020, according to recent Gartner research. Infrastructure-as-a-service (IaaS) spending is also expected to triple by 2020.

Builder of New digital Platforms

To succeed in a cloud-centric world, the IT chief of the future will need to focus intensely on automation within the IT value-chain. 75% of IoT projects will require new digital platforms, homogenized into the enterprise. The head of IT is fast-becoming the chief builder of these platforms, but effective deployment also requires the CIO to enter the realm of operational technology.

Thus, rather than focusing on gaining efficiencies, the IT chief today must turn his attention to building a holistic digital ecosystem comprising clients, suppliers and business start-ups across a multitude of service providers. Enabling new digital case implementation to drive top-line revenue growth will be a key differentiator.

New Challenges Ahead Will Further Augment the CIO Role

Historically, the C-suite agenda has been coiled around customer interactions. Today, however, growing attention is being paid to protecting client data and the organization's own infrastructure. It comes as no surprise that, in a recent study by Gartner reflecting data from more than 3,000 CIOs, 71% viewed digital security as the most critical emerging technology to explore in 2018, a trend that is set to continue.
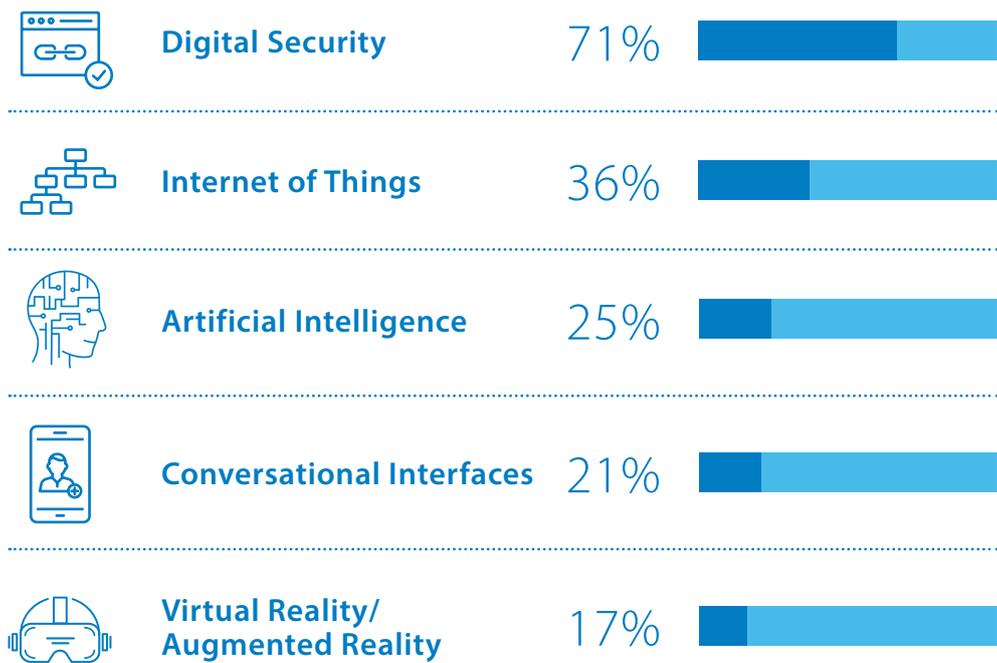
Cybersecurity will Continue to Loom Heavy

CIOs must hence help define and refine holistic security strategies, combining tools, processes and integrated ecosystem co-ordination, going beyond just firewalls and data encryption to complete visibility into partners' IT stacks and dark web chatter.

In light of the gathering storm of new challenges, designing innovative cyber security strategies and leveraging intelligent services and devices that can withstand the onslaught of threats will be a top CIO priority.

Plans for Emerging Technologies 2018

(percentage of respondents)

Technology	Percentage
Digital Security	71%
Internet of Things	36%
Artificial Intelligence	25%
Conversational Interfaces	21%
Virtual Reality/Augmented Reality	17%

Source: Gartner 2018 CIO agenda survey

Modus Operandi of the Next-Generation CIO

The following 7 key areas are our expert recommendations on where a CIO should best play and focus efforts to drive the organization of the future forward.

1. Focus on Integrated Services

In the digital age, a CIO's success will not be measured only by what they build, but also by the services they integrate. There is a clear shift from one who buys and manages fixed assets to one who manages services (e.g., infrastructure, applications, and security). Greater focus on service management will require leveraging the shared services model, where possible.

2. Create New Hybrid Functions

Today's fluid business ecosystem calls for cross-functional experiences and versatile capabilities. The CIO role should therefore be heavily connected with global services functions like marketing, HR, finance, procurement, sales order management and supply chain for optimal organizational agility. Incumbents need to be chosen from a non-traditional skill-pool that goes beyond information technology expertise.

Filippo Passerini, group president of global business services and CIO at Procter & Gamble, makes an interesting case in point. He started his career in IT, later moving on to marketing and operations, before taking on the CIO role. Former CIO at Merck, Chris Scalet, on the other hand, began his journey within the human resources function.

> "For the future CIO, while the clichéd inward and outward facing responsibilities would stay, data sharing and execution of business roadmap would no longer be in a hub-and-spoke model with the CEO at the center. The new model would rather be a point-to-point one that airline carriers already execute on, with the CIO convening the tentacular data interchange to meet timely business needs. This would in turn render the CEO's role highly strategic and the business functions better coordinated."
>
> Balaji Ramanujam
> CIO & Digital Products Innovator, Tekvoyage

3. Build Strong C-level Relationships

The success of this new role hinges on strong C-level relationships. Engaging beyond the conventional IT network and maintaining a close working relationship with the CFO is not enough. Evolving new partnerships with the chief marketing officer, CEO and COO is key. Authenticating this, recent research by MIT shows that CIOs now spend about 40% of their time engaging with non-IT peers.

4. Align your Digital Strategy

The CIO is going to be responsible for hiring a CDO (chief digital officer). Many leading companies are starting to introduce the role of CDO as an orchestrator of digital innovations. The CDO has the mission to collect, feed and grow disruptive products and services. In concert with a CIO, this role can help lead the transition into new digitally-enabled opportunities that unlock the power of algorithms and automated, intelligent workflows.

5. Remove Silos

The legacy, silo'd IT organization will virtually disappear. In its place, technology experts will work hand-in-hand with the business to drive innovation. The clear shift to data-driven processes means that business and technology must work closely together to craft use cases and differentiated processes.

6. Calibrate the Balance

The importance of network effects are continuing to be amplified in several areas of today's digital business landscape. To harness this dynamic, organizations should leverage digital assets to create new interactions with consumers, partners and employees, making themselves incredibly easy to do business with.

7. Combine Standardization with Decentralization

Perhaps the single most powerful step CIOs can take it to free an organization's data from its applications. By creating a single "system of record" for data, applications and web services can act as consumers of data, dramatically reducing the time required to stitch together new business use cases.

In 2018 and beyond, the stage is set for a major power shuffle as digital disruptions intensify. We see the role of the IT chief only intensifying in importance and playing an even broader leadership role in shaping the future of the enterprise. For those firms with a dexterous CIO in place, willing to embrace the opportunities and nurture a culture of innovation, the prize is for the taking.

About the Experts

Joshua Biggins – **Partner, Enterprise Strategy & Architecture Practice (U.S.)**

Joshua is a U.S.-based partner with Infosys Consulting where he leads the Enterprise Strategy & Architecture practice for a number of our industry verticals. For the last 22 years he has focused on helping clients leverage technology to transform business models and unlock value. His experience is focused on the most pressing issues on the CIO agenda, including AI and automation, IT cost reduction, application portfolio rationalization, managed services transformation and technology modernization. He is a regular contributor to the firm's digital publications and is often sought-after to speak at client events. Joshua graduated from the University of California, Berkeley and currently resides in Seattle, Washington.

Dan Albright – **Partner, Leadership Team Member, & Digital Supply Chain Management Practice Head (U.S.)**

Dan has 25 years of management consulting experience across the retail, CPG and distribution industries. He currently manages the supply chain group for Infosys Consulting in the U.S., overseeing some of our top clients such as XPO Logistics, TKE, Sprint and Microsoft. He is also a member of the U.S. leadership team and leads a number of corporate initiatives to support our firm's growth strategy. Dan has worked across all components of business and technical transformations during his career. Prior to joining Infosys Consulting, he led the consumer packaged goods, retail, and distribution service practice at Capgemini Consulting. Dan resides with his family in Atlanta, Georgia.

Roberto Busin – **Partner & Manufacturing Segment Head (Europe)**

Roberto leads the organization's Europe manufacturing segment and manages its Switzerland country operations. He is an expert on transforming companies in the areas of supply chain, operations and digital, and has extensive experience setting up global delivery centers with multi-national teams around the globe. Roberto works with business leaders across some of the biggest brands in Europe, and is bringing new ways of approaching artificial intelligence enablers to organizations.

Anmol Jain – **Associate Partner, Advisory Practice (APAC)**

Anmol leads the firm's CIO advisory practice for the Asia-Pacific region. He has extensive experience in consulting and business transformation, primarily across the financial services industry. Anmol has deep expertise in defining new business operating models, process optimization, banking transformations and digital ecosystems. He previously worked with sister company Infosys Finacle, and prior to that in roles with Capgemini and Accenture. His current focus area is on driving business value for clients through automation and collaboration by harnessing the potential of AI, cloud and analytics. Anmol is also a pro bono advisor to several start-ups in the region.

About Infosys Consulting

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