



The route to digital business leadership

September 2017





Introduction

Whether disruptive technologies are viewed as a threat, an opportunity, or both, the need for digitally enabled business transformation is a survival issue for some and a strategic imperative for just about everyone else.

Digital transformation may be enabled by technology, but its success is about much more. It means taking on business-wide change to modify structures and processes, as well as the way people work – across the front, middle, and back offices. It also means integrating high volumes of data to predict, influence and respond to customer behavior. All with the objective of securing clear financial returns.

This puts even more pressure on the IT function to deliver innovative digital capabilities at a significantly faster pace. IT must shift from primarily supporting business strategy to being an integral part of it – bringing CIOs the opportunity to work closely with their business partners to lead innovation across the enterprise. The pervasiveness of digital was evidenced in this year's Harvey Nash / KPMG CIO Survey, where 41% of responding organizations already have an enterprise-wide digital vision and business strategy, an increase from only 27% two years ago.

But organizations are meeting with varying levels of success. Less than one in five (18%) are highly effective in using digital technologies to advance their business strategy. We call this small percentage of organizations **digital leaders** and not surprisingly, they perform significantly better across a number of key areas when compared with the others in the survey.

Four areas where digital leaders clearly differentiate themselves are:

- higher focus on growth and innovation
- better at business and IT strategy alignment
- aggressive investment in disruptive technologies
- stable and secure infrastructure already established

As pressure mounts for all organizations to join the ranks of digital leaders, we have identified six initiatives that can move them down that road. This report provides actionable advice for organizations that want to close the gap and become a digital leader.

About the Survey

The 2017 Harvey Nash / KPMG CIO Survey is the largest IT leadership survey in the world in terms of number of respondents. The survey of 4,498 CIOs and technology leaders was conducted between December 2016 and April 2017, across 86 countries, and five languages.

Key takeaways



The 2017 Harvey Nash / KPMG CIO survey reveals that 18% of responding organizations are digital leaders



Digital leaders are 4x more likely to be very effective at fostering innovation than others



Digital leaders are very effective at aligning business and IT strategy at 2x the rate of others



Digital leaders are adept at integrating core business systems with newer digital technologies



Digital leaders aggressively invest in disruptive technologies



Digital leaders are very effective at selecting the most appropriate technologies and architectures



The digital transformation imperative

Digital disruption is now the new normal facing almost every business across every industry.

The imperative for digital transformation is compelling organizations to innovatively deploy digital capabilities across operations: their business models and processes, value chains, products and services, and the way they engage with and serve customers.

According to the recent Harvey Nash / KPMG CIO Survey at least one in four organizations in every industry sector, including non-profit and government, now has an enterprise-wide digital strategy (see figure 1).

But digital transformation is not just about creating customer-facing mobile apps and engaging on social media. Sustainable competitive advantage only comes when organizations fully integrate across the front, middle, and back offices to create a truly end-to-end digital enterprise. For its part, the IT function has a critical role to play – but in new and different ways.

Organizations that are digital leaders recognize that the demand, pace and skills needed far exceed the resources of the IT function, requiring a different operating model to be successful.

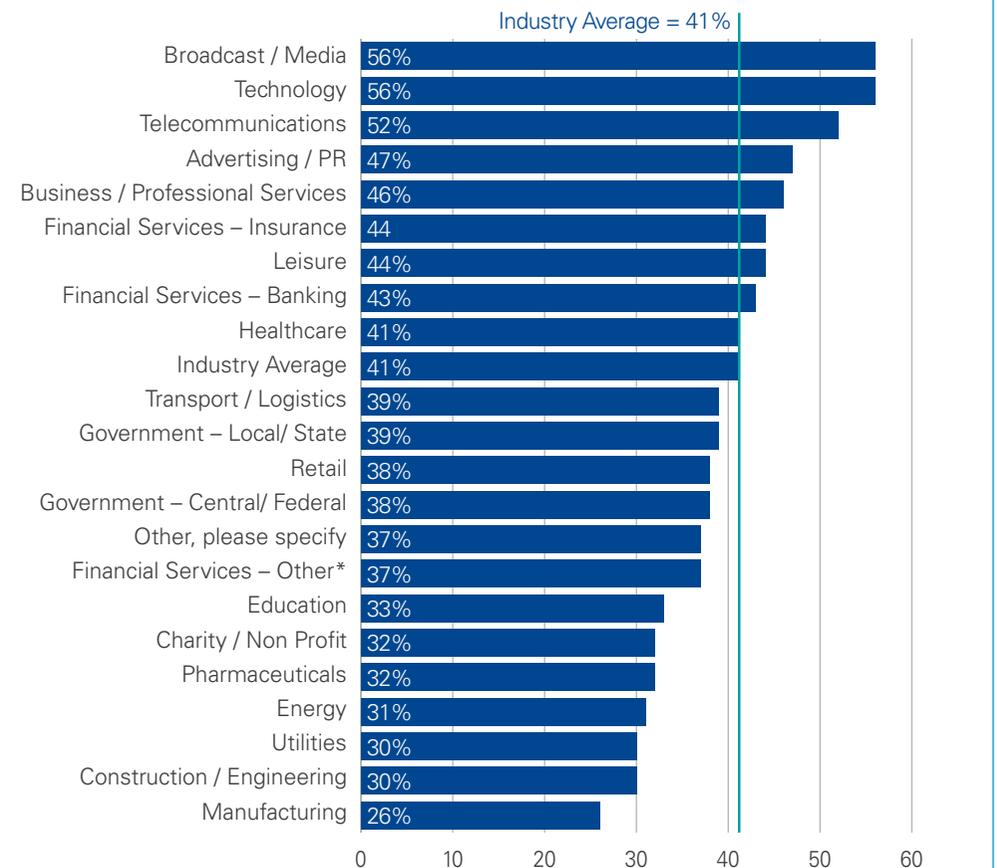
Rather than continuing in the role of captive solutions provider, IT must become a solutions broker, enabling the business to become increasingly self-sufficient in procuring solutions while ensuring that appropriate governance mechanisms are in place.

This means architecting an environment that exposes existing and new technology assets (infrastructure, applications, data) and makes them available to internal users and in some cases externally to customers and partners. The focus shifts from delivering projects to delivering platforms and capabilities.

Amongst all this, CIOs have a key role to play. They are in a unique position to collaborate with their business peers and the C-suite, educating them on digital disruption, its implications for the organization, and the business opportunities it presents.

The CIO must be at the forefront of the digital transformation journey.

Figure 1: Enterprise-wide digital strategy by Industry



Source: Source: Harvey Nash / KPMG CIO Survey 2017 *(e.g. Investment Management, Real Estate etc.)



What makes a digital leader?

For the last three years we have been tracking the adoption of digital strategy with the Harvey Nash / KPMG CIO Survey. In this year's survey of nearly 4,500 respondents we wanted to gather additional insights into how organizations were performing on their road to becoming a digital business. Not surprisingly, there were significant differences in their effectiveness at adopting digital technologies. Less than one in five (18%) were very effective at using digital technologies to advance business strategies.

Based on the survey data, conversations with client organizations, and evidence from member firms' experience, we have identified four key practices that set digital leaders apart from other organizations.

1. Build on a stable and secure infrastructure

Today's digital economy operates 24x7 and requires businesses to support wide-ranging demands for always available products, services, and systems. Customer expectations are intolerant of any outages. This creates significant challenges for IT as it eliminates scheduled downtime for routine maintenance and upgrades. It's virtually impossible to avoid failures. Instead infrastructure and applications must be architected for resiliency so that they can automatically detect failures and react accordingly.

This is a radical change for IT and impacts culture, organization structures, operating model, technology, and architecture. Digital leaders recognize that digital business transformation requires IT transformation, involving a completely different approach to IT – one that goes well beyond adding a second speed or standing up a digital group. Digital leaders do the hard work upfront to ensure that they build their digital capabilities on top of a stable and secure infrastructure whether internally or externally sourced. More than half of digital leaders are very effective at selecting the most appropriate technologies and architectures versus less than one third of non-leaders.

The growing frequency, variety, and intensity of cyber attacks, some of them state sponsored, is putting additional pressure on both public and private sector organizations. WannaCry and the more recent NotPetya ransomware attacks crippled companies globally and were still causing problems for some a week after the initial attack. Digital leaders are more than twice as likely to be very well positioned to identify and deal with security/cyber attacks. Clearly, many organizations continue to underestimate cyber threats.

2. Invest aggressively in agile and disruptive technologies

As digital technologies accelerate the pace of business change, organizations are placing more emphasis on agility, speed, and innovation rather than the usual efficiency and cost savings to remain competitive. Digital leaders are aggressively investing in agile and disruptive technologies including agile methodologies, cloud, digital labor, and artificial intelligence (AI).

Agile

Rising customer expectations and the consumerization of IT has raised the competitive bar and requires companies to provide a steady stream of new capabilities and improved customer experience. But frequent releases of software into production is incompatible with traditional software development methods where updates can take months and major changes can take a year or more. Digital leaders are adopting agile methodologies and DevOps to support continuous delivery of incremental enhancements at a higher rate than non-leaders.

However, getting the most value from digital investments isn't just about how fast you can develop and deliver them. It is also dependent upon integrating new customer-facing solutions with existing middle and back office systems. Digital leaders report that they are very effective at integrating core business systems with newer digital technologies, at three times the rate of non-leaders.



What makes a digital leader? cont...

Cloud

Today, cloud computing services are at the core of almost all digital disruption, providing anything from unlimited scalable and cheap infrastructure on demand (IaaS) to complete turnkey solutions (SaaS), and more recently robust, open-source platforms to support continuous delivery (PaaS). Many organizations have adopted a cloud first strategy – but adopting cloud and getting value from it are two different things. It can be challenging, especially for large organizations trying to orchestrate different service models, delivery models, and locations while balancing public versus private cloud and making sense of an ever-expanding ecosystem of cloud service providers.

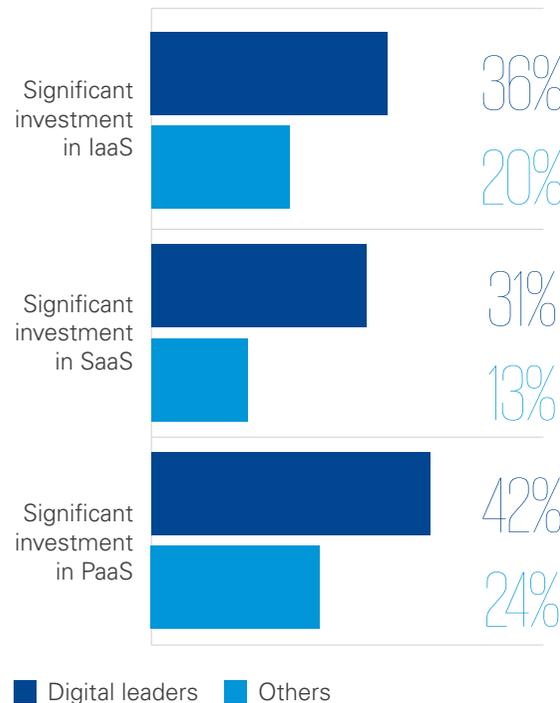
Digital leaders are currently making significant investments in cloud – at almost double the rate of others – and expect to continue to outpace non-leaders in their cloud investments over the next three years, although the gap will narrow (see Figure 2).

Digital labor

Digital labor (intelligent automation such as robotics, cognitive automation) is creating step-change improvements in costs, quality, and speed for businesses across all industry sectors. These range from automating routine back office processes to creating highly customized, patient-specific cancer treatments. Digital leaders are investing in all classes of digital labor at rates more than double that of non-leaders, and implementing digital labor solutions outside of IT across the enterprise including finance, HR, marketing, and sales, again at double the rate of non-leaders (see Figure 3).

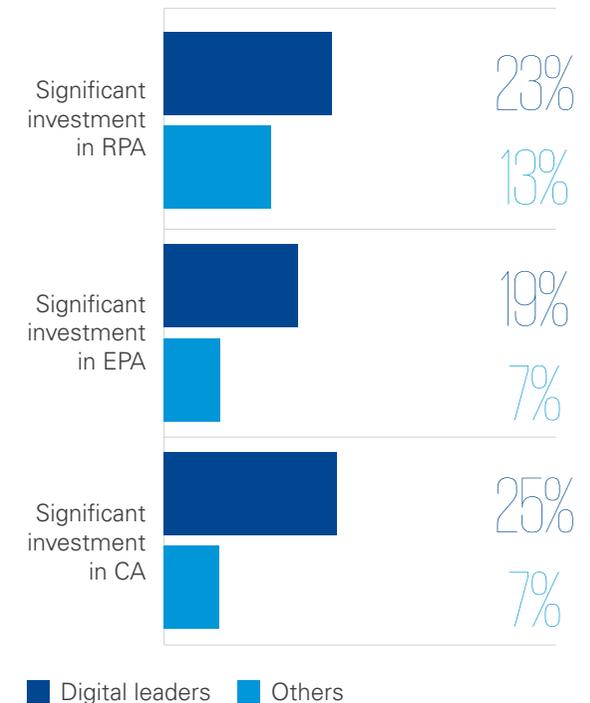
These investments appear to be paying off as digital leaders report that their digital labor projects are very effective at delivering benefits – at twice the rate of non-leaders.

Figure 2: Current year investment in cloud



Source: Source: Harvey Nash / KPMG CIO Survey 2017

Figure 3: Current year investment in digital Labor



Source: Source: Harvey Nash / KPMG CIO Survey 2017

RPA = Basic robotic process automation
EPA = Enhanced robotic process automation
CA = Cognitive automation



What makes a digital leader? cont...

3. Adept at aligning business and IT strategy

Innovation, technology and information are fundamental to digital business and increasingly shaping and enabling business strategy. It has never been more important for organizations to ensure that IT and business strategy are tightly aligned. In fact, a business strategy that is not intrinsically linked to technology will lead to failure.

In this case alignment is no longer the CIO creating a strategy for the IT function and then aligning it with business strategy, but working closely with the C-suite and the business heads to develop a digital business strategy that addresses the strategic use of technology across the enterprise to produce the desired business outcomes.

However, this remains aspirational for most, so whatever the method, digital leaders are twice as likely to be very effective at aligning business and IT strategies as non-leaders.

4. Focused on innovation and growth

Digital transformation is about using disruptive technologies to innovate across the customer value chain from customer experience and engagement through to back office systems and processes. Innovation is driving new business and operating models; digitizing core business processes; and creating new, incremental revenue streams. New business models built on platforms, sharing, or crowd sourcing are transforming entire industries and putting intense pressure on incumbent organizations in retail, transportation, lodging, and finance, to name a few.

Digital leaders are more focused on innovation and growth than other organizations. At digital leaders, the board's number one business issue that they are looking for IT to address is "developing innovative new products and services" while non-leaders are much more focused on costs (see Table 1). This focus is also driving leaders' investments in cloud, as their number one reason for using cloud is to accelerate product development and innovation (43%), nearly a third higher than non-leaders (32%).

Table 1: Top three key business issues that the management board is looking for IT to address

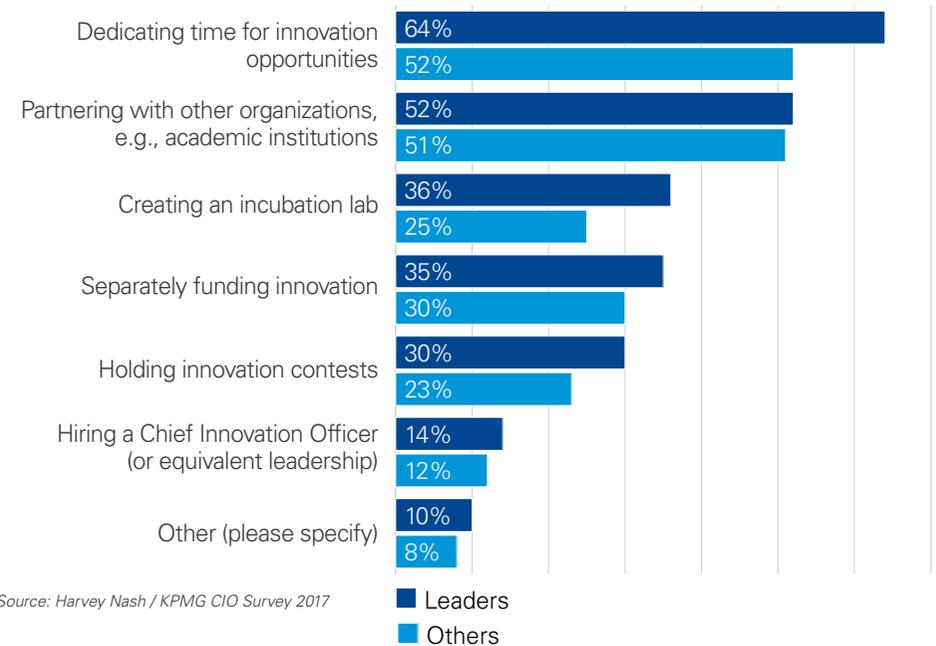
Leaders	Rank	Others
Developing innovative new products and services	1	Saving costs
Increasing operational efficiencies	2	Delivering consistent and stable IT performance to the business
Saving costs	3	Increasing operational efficiencies



What makes a digital leader? cont...

When it comes to innovation, it doesn't just happen. It requires a culture that values and promotes it. Digital leaders are more focused on fostering innovation within their organizations. They are more likely to dedicate time for innovation opportunities, set up incubation labs where business and IT can jointly explore disruptive technologies, as well as prototype and pilot potential solutions. They are also more likely to have a dedicated innovation budget to ensure that funding for innovation is protected and doesn't have to compete with other alternatives (see Figure 4). The result is that they are four times more likely to be very effective at fostering innovation than others.

Figure 4: Fostering Innovation





What makes a digital leader? cont...

CIOs are the technology leaders within their organizations. But at digital leaders, CIOs play a more strategic role, working closely with their C-suite peers and other business leadership to help develop the digital business vision and strategy. In fact, three quarters of digital leaders have an enterprise-wide digital business vision and strategy, more than twice that of the others. It's not surprising that at digital leaders 41% of CIOs are leading innovation across the business, versus only 23% of non-leaders where 45% are leading innovation in technical/IT matters (see figure 5a). Interestingly, all organizations said that CIOs should be playing a bigger role in leading innovation across the business (see figure 5b).

Technology-enabled innovation is a critical component of digital transformation. The survey results send a clear message that CIOs are expected to play an important role in fostering and leading such innovation not just within the IT function, but across the business.

These four practices of digital leaders that we have just discussed are the most significant differentiators gleaned from this year's CIO survey but they are by no means the only ones. Digital leaders were also better at executing projects, managing risk and security, developing the right culture and talent, and facilitating the use of data and analytics.

Figure 5a: The role the CIO is currently playing in promoting innovation

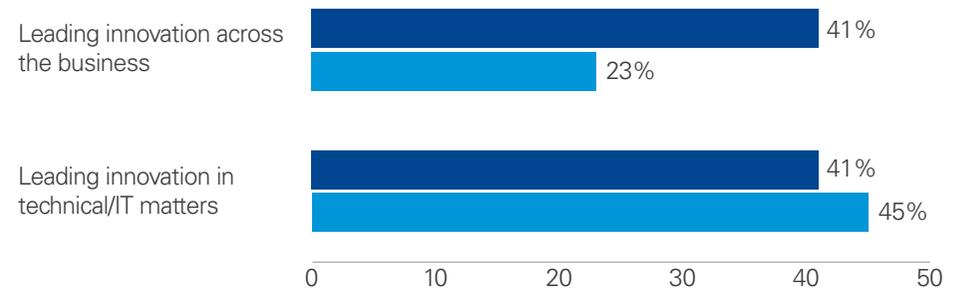
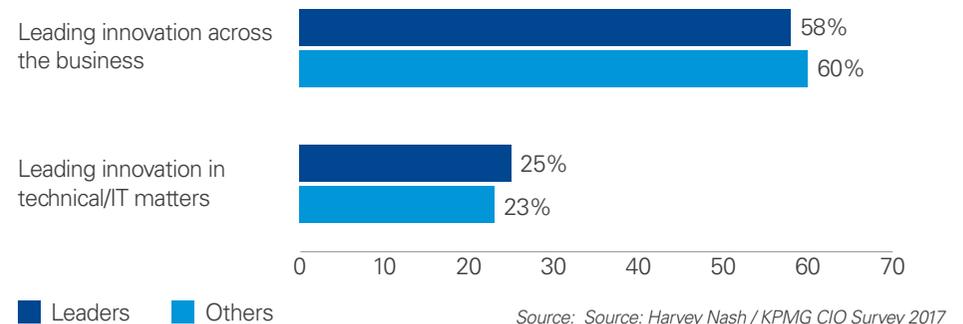


Figure 5b: The role the CIO should be playing in promoting innovation





Six initiatives to help close the gaps

Digital leaders are not limited to web-native or start-up companies, despite the advantage such organizations have of not being burdened with legacy systems and entrenched cultures. After all, established companies have higher brand awareness, an existing customer base and often more abundant resources to underpin their digital transformations. But how do you become a digital leader? From member firms' experience working with client organizations on their digital transformation journeys the following six mutually reinforcing initiatives have emerged as key enablers of successful transformations.



Educate/evangelize the C-suite

Digital disruption is a given and digital transformation is how many organizations respond to it. Most boards, CEOs and business executives now understand the need to become “digital” and are committed to it one way or another, but are often unsure of exactly what it means and how to get there. In the absence of an enterprise-wide digital business vision and strategy, there is no shortage of pundits, consultants, and vendors willing to step in and provide point solutions directly to the business. In an environment where cloud-based SaaS solutions can be “turned on” and configured quickly with minimum upfront investment, this shadow IT can grow exponentially. While this is not automatically a bad thing, it can easily lead to many non-integrated and duplicative solutions that solve a specific business problem for a single business unit at the expense of optimizing for the enterprise. Longer term, these can result in high integration and support costs or worse, become a technology dead-end.

CIOs can play a significant role by leveraging their understanding of disruptive technologies, and their experience with existing systems and business processes, to educate the C-suite and business leaders on what is possible and what the trade-offs are. They should take a proactive role in helping to drive the leadership team towards an overall enterprise-wide digital business strategy, promote an innovation agenda, and help devise new governance structures and processes that strike the right balance between risk and reward while pushing decision making and accountability out to the business.

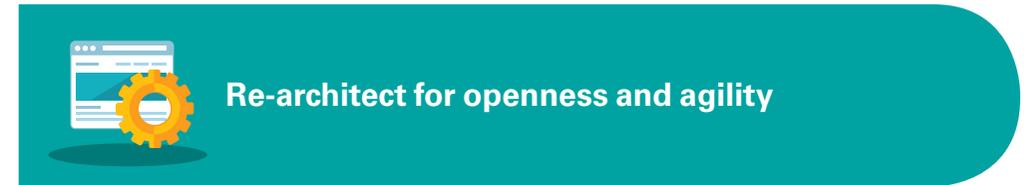


Six initiatives to help close the gaps cont...



Some actions CIOs can take include:

- **Regular briefings to the board and executive team.** Use board and executive team meetings to facilitate discussions on disruptive technologies and the challenges and opportunities they present, what competitors are doing, and what IT is doing to improve its digital capabilities.
- **Sponsor interactions with vendors and other companies.** Encourage interaction and collaboration with other organizations. Lead executives on visits to meet with other executives at companies that have had success in their digital transformations. Also arrange trips to see vendors that are industry leaders and have them share their capabilities and experiences.
- **Stand up a Center of Excellence (CoE).** Bring together IT and business people in small teams to evaluate and prototype potential digital solutions. Leverage in-demand skills by putting them into a Center of Excellence where they can form a critical mass to get digital efforts off the ground. Consider building out a physical space, a digital innovation lab, as the locus for this activity.



Most IT architectures in place today were designed for stability and to limit choices, with a focus on conformance to standards to achieve a homogeneous and reliable environment. Core applications tended to be large, monolithic systems with layers of dependencies and long release schedules. In the digital era, where speed and agility are key drivers, these architectures have become liabilities as their rigidity makes it time consuming, expensive and sometimes impossible to integrate new capabilities, especially when trying to integrate new front office digital solutions with back office transactional systems and databases. Often, when integrations are made, they are highly customized, tightly coupled and increase complexity while adding to technical debt.

Digital businesses require open, adaptable, and modular architectures that are based on services and optimized around speed, scalability, and reliability as well as facilitating innovation. Rather than building large monolithic solutions running on premises or outsourced data centers, architectural approaches and technologies have emerged that enable an incremental approach to re-architecting IT. Existing core systems can be abstracted by developing application programming interfaces (APIs) to expose their functionality. A microservice architecture approach provides a new way to develop capabilities that supports agility and scalability (see Sidebar on next page).

CIOs can start the architecture discussion by first focusing on the goals as defined by the business. What capabilities are required to achieve these goals? What does the target architecture look like to support these capabilities? Simultaneously begin to explore the technologies and tools: some of them are relatively immature while others demand hard-to-find skills. Determine which ones are aligned with your architectural direction and within your abilities. Start small and evolve incrementally.



Six initiatives to help close the gaps cont...



Nurture ecosystem of capabilities

The pace and scale of digital business is beyond the scope of any IT organization, even in the largest firms. There isn't enough time, talent, or resources to build everything. That's the bad news. The good news is that there is a growing collection of new ecosystems providing access to a large range of digital capabilities that can be leveraged to provide competitive advantages quickly and often inexpensively.

Digital business models will be enabled by tapping these ecosystems and creating partnerships. These ecosystems come in a variety of types including social networks that can be used to improve customer engagement and brand awareness, data providers that enable aggregation of internal and external data to improve decision making or refine target marketing, and service providers such as payment processing or delivery services. Think of connected cars and how they have opened an entirely new revenue stream for car manufacturers as the car becomes a platform for selling additional services, e.g. Wi-Fi, streaming music, map updates, concierge services, etc.

Participating in an ecosystem to acquire or gain access to a capability or service is just one source of value. Another source is when an organization monetizes its assets by making them available to others. This can be a result of having proprietary data that others find valuable and will pay to access. For example, some credit card issuers are now providing free FICO or other credit scores to their card holders as a result of the credit scoring companies making this data available. Another source of value may come from internally developed software that could be packaged and sold externally.

CIOs can begin by identifying partners that can help accelerate the digital strategy. What capabilities are needed, who has them, what type of relationship makes the most sense? What assets does the organization have that might be of value to others, how can they be packaged and accessed, and what are the legal and regulatory issues? Finally, what does IT have to do to take advantage of these ecosystems?

Microservices and containers

Microservices, one of the hottest buzz words in technology today, are an architectural style for developing applications as a collection of small loosely coupled, independently deployable, and independently scalable services that are organized around business capabilities.

Originated by several web-native companies, the primary driver of a microservices approach is agility in support of continuous delivery and scalability. An application composed of microservices can be in a constant state of change as individual services can be modified and new services added without affecting the rest of the application. This contrasts with a monolithic application where the entire application must be shut down to accommodate any change.

At the same time, it enables improved scalability because just the parts of an application that cause contention or bottlenecks can be scaled, not the entire application.

A container is a lightweight, stand-alone, executable package of software that includes everything needed to run it, and is a more efficient mechanism for deploying microservices.

Containers are not a requirement for microservices but the inherent advantages of deploying microservices in containers means they are becoming a standard practice.

Microservices and containers are not silver bullets and have their own shortcomings but represent an important new approach that can't be ignored. CIOs should be actively engaged in understanding how these technologies and approaches could be used to their benefit.



Six initiatives to help close the gaps cont...



Promote business technology self-sufficiency

The past was about IT organizations building technology-enabled solutions that the business ordered, a relationship that was often strained by projects that were delivered late, over budget, and with poorer functional capabilities than expected. In some cases, the business responded by directly procuring solutions without IT's involvement – so called shadow IT, as touched on earlier.

The availability of virtualized and public cloud infrastructure, a large and growing portfolio of SaaS solutions, and maturing tools for automating operations are now being leveraged by digital leaders to promote a different flavor of shadow IT. They work with the business to make it as technology self-sufficient as possible within well-defined boundaries. This is accomplished in several ways including: an enterprise architecture that ensures that IT investments are aligned with business priorities with consistent usage of technology across the organization; a governance approach that clearly articulates what areas the business has autonomy to pursue its own technology-enabled capabilities and the processes to be used to integrate solutions with the rest of the enterprise; a published catalog of approved solutions and vendors that have gone through an evaluation and certification process with pre-negotiated contracts and pricing; and former IT roles like business analysts, programmers, database administrators, and quality assurance are being embedded with the business. Senior level business relationship managers provide guidance and facilitate the interchange between IT and business leadership.

Re-architecting to create greater openness and nurturing ecosystems can be enablers that help the business towards technology self-sufficiency. CIOs can accelerate the process by engaging with their business counterparts to work out a governance approach that balances the business need for speed and agility without creating longer term costs and increasing risks beyond an acceptable level.



Pay down technical debt

Years of bad habits in developing and maintaining applications has led to an accumulation of technical debt, variously defined as the result of “intentional and unintentional violations of good architectural and coding practices” or “the future costs attributable to known violations in production that should be fixed”. Without a disciplined approach to regularly paying down technical debt, IT organizations attempting to support digital transformation will be increasingly challenged by legacy systems that do not scale or have reliability issues, decreased productivity, and increased spending on maintenance that reduces funding for innovation.

Leading organizations pay down technical debt as part of their everyday operations by dedicating a fixed amount of capacity to improvement work which can include refactoring, automating work, and other non-functional requirements. This can be done by allocating time for everyone to spend on these kinds of activities individually, but can be even more powerful when everyone works together in scheduled day-long or week-long improvement blitzes to pay down technical debt.

CIOs first need to discover and quantify technical debt and establish a baseline. There is a growing portfolio of tools available to assess and communicate technical debt ranging from code analysis to test coverage to architecture conformance analysis. This includes technical debt dashboards that visualize the quality of code, test, design, and architecture. Once discovery is completed, a plan to pay down the debt based on its impact on current as well as planned initiatives can be made.



Six initiatives to help close the gaps cont...



Embed culture change programs throughout

By its nature, digital transformation requires operating model change and blurs boundaries between different teams and functions. That means the final critical component to a successful digital transformation is a robust and integrated culture change program.

Just as digital disruption is industry-specific, culture change is contextual meaning a one-size-fits-all model is unlikely to bring the required results. Nor can it happen piecemeal, especially when there is an increasing need for agility and cross-boundary collaboration.

Successful culture change depends on sharing a unified vision, and engaging and inspiring employees. But companies should consider the impact on all stakeholders (internal and external) and prioritize efforts carefully to enable the “quick wins” that encourage buy-in and support.

Of all the interventions that help to move culture in the right direction, the most critical is change leadership. More than 56% of initiatives fail due to lack of leadership. Many leaders will benefit from developmental support in building their capabilities. Other studies¹ show that structured and specific communication is a key contributor to the success of change initiatives.

Encouraging innovative thinking at all levels of an organization empowers people to take risks, embrace experimentation, and champion inventive ideas. In such an environment, digital disruption is not a threat but an opportunity to create smarter products and services.

1. e.g. The High Cost of Low Performance: The Essential Role of Communications; PMI, May, 2013

Conclusion

Digital transformation is a journey measured in years. Those that have been successful, i.e. digital leaders, do a few things better than everyone else. KPMG professionals also know that this is hard work since only one out of five organizations currently qualify. There are no guarantees, but CIOs that step up to embrace the role of change agent and proactively work with their C-suite counterparts and other business leaders to drive their digital transformations put their organizations in a better position to succeed. For most firms, it's not too late – but time is running out. Will your organization be a digital leader in next year's survey?



How KPMG can help

KPMG recognizes that today's CIOs face increasingly complex demands and challenges in becoming the strategic technology partner their businesses require.

KPMG's CIO Advisory practice helps CIOs, technology leaders and business executives harness technology disruption, more effectively manage technology resources to drive agile and improved business performance, enhance strategic position, and improve the strategic value of their technology investments.

If your IT organization is seeking ways to leverage technology as a source of innovation and competitive growth, KPMG member firms can help.

For more information on CIO Advisory's service and capabilities, please visit kpmginfo.com/cioagenda

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