IDC FutureScape

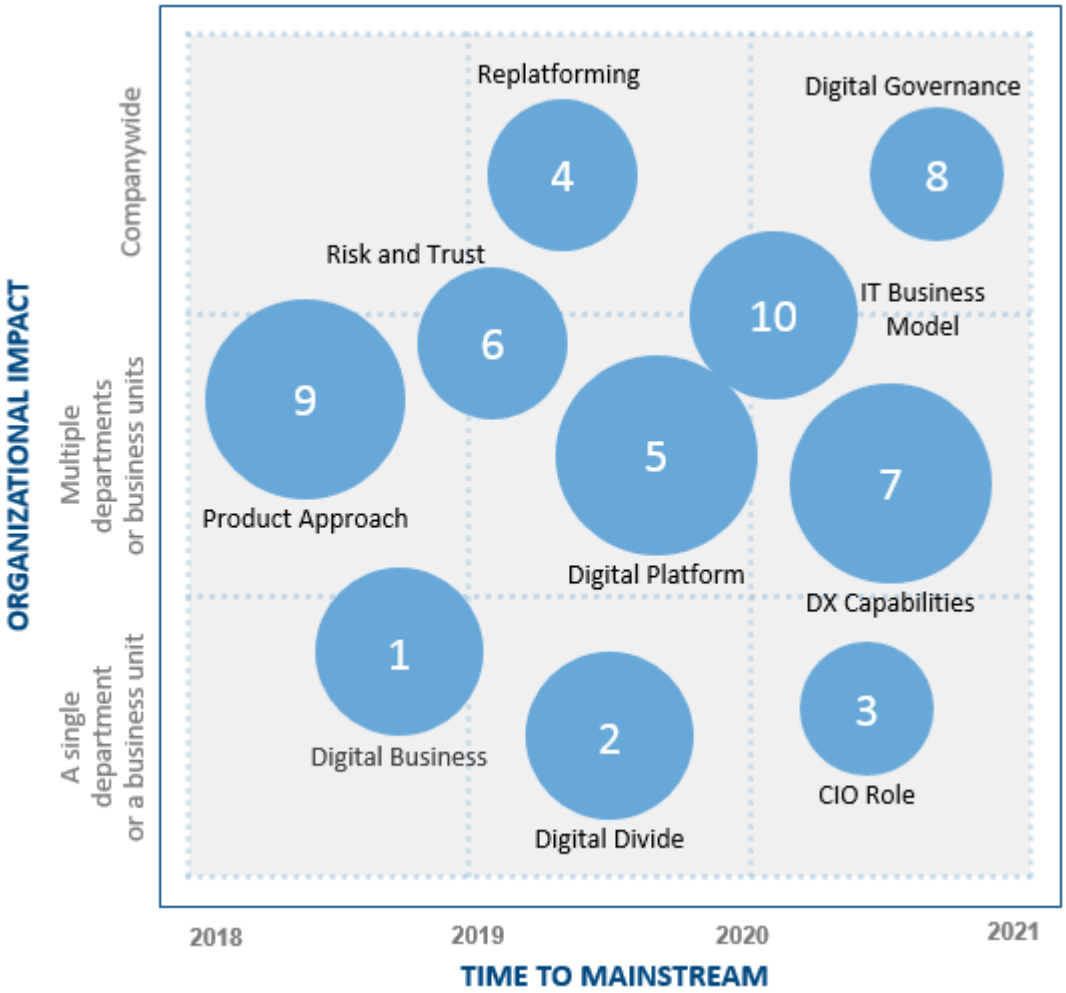
IDC FutureScape: Worldwide CIO Agenda 2018 Predictions

Serge Findling
Michael Jennett
Joseph C. Pucciarelli
Marc Strohlein

IDC FUTURESCAPE FIGURE

FIGURE 1

IDC FutureScape: Worldwide CIO Agenda 2018 Top 10 Predictions



Note: The size of the bubble indicates complexity/cost to address.

Source: IDC, 2017

October 2017, IDC #US41789117

Figure 1 presents IDC's CIO agenda top 10 predictions in terms of their likely impact across the enterprise and the time it will take for the predictions to reach mainstream. By mainstream, IDC means the broad middle of the bell curve of adoption (i.e., the 40–60% of enterprises that are neither the first movers and early adopters nor the last to act). Each bubble's size provides a rough indicator of the complexity and/or cost an enterprise will incur in acting on the prediction.

EXECUTIVE SUMMARY

Digital transformation (DX) is now mainstream, yet IDC sees more massive changes to come in the 2018-2021 period as digitally fueled disruptors roil and reshape businesses and industries. During this period, transformation initiatives will shift into overdrive, leading to the development of a fully scaled DX economy. Lines are being drawn in the sand, separating industry laggards from "digital-native enterprises" that can harness the power of technology to multiply innovation and accelerate their businesses' appetite for transformation. The clear mandate for every enterprise in the next several years is to reimagine and reconstruct itself to compete in the increasingly digital economy that's platform powered and ecosystem enabled.

For CIOs and senior information and technology (IT) executives, the challenge is to think and operate like a digital-native enterprise in the face of the emergence of platforms, innovation accelerators, machine learning, augmented skills, micro-personalization, new partnerships, and new relationships. At the same time, change continues to move from linear to exponential and from evolving to episodic and unpredictable — requiring businesses to build digitally fueled adaptive processes, decision-making, and technology platforms to survive, let alone thrive.

In that context of continuous emergence, enterprise technology environments must adapt at accelerated pace to the scale, scope, and speed of digital transformation. For the well-prepared, state-of-the-art IT organization, the thrivers will achieve:

- **Scale:** Digital products and services that have very small marginal costs and can rapidly scale up and down (Partners and customers are leveraged to create ecosystems around their products and services that scale well beyond what the business alone could achieve.)
- **Scope:** Digital resources that can be combined and integrated with each other and with physical assets to cover new needs in new market and new industries
- **Speed:** Digitalization and automation that remove any friction to design, creation, and diffusion of digital offerings

However, for less prepared organizations, the challenge is stiffer, with costly, rigid, and semiautomated legacy systems that are a major drag to participating in the digital economy. For those organizations, this is one of the last opportunities to jump on a train that is already moving and attempt to cross the digital divide.

The main actions that should be on every CIO's agenda this year are:

- Build the enterprise digital platform while replatforming and rationalizing the legacy environment.
- Create flexibility and agility through technology capabilities.
- Shift from project management to product and design approaches.

This IDC study provides IDC's top 10 predictions for the 2018 CIO agenda. These predictions provide a strategic context that will enable CIOs to lead their organizations through a period of multiplied innovation over the next 36 months. They also lay out IDC's vision for the 10 most important shifts that will happen in IT organizations over the next 36 months and will guide senior IT executives in the formation of their three-year strategic IT plan.

"As the new digital economy emerges from disruption, CIOs are seeing their last opportunity to cross the digital divide and earn their right to play in the next phase," says Serge Findling, vice president of Research for IDC's IT Executive Programs (IEP).

IDC FUTURESCAPE PREDICTIONS

IDC has chronicled the rise of digital transformation and the disruptions and opportunities it poses for traditional businesses and their CIOs. In *IDC FutureScape: Worldwide CIO Agenda 2017 Predictions* (IDC #US41845916, November 2016), we noted that growing maturation of digital transformation had raised the bar for all businesses, dictating the need for a full spectrum approach. This approach holistically accommodates all aspects of leading and managing technology invention, assimilation, utilization, and retirement while providing a powerful integrated framework and the tools for competitive differentiation and business continuity. We also noted the bifurcation of IT organizations into digital survivors and thrivers.

This year we note that the bar continues to rise, leading to a growing chasm between survivors and thrivers — "the digital divide." That divide becomes increasingly difficult, if not impossible, to cross as digitally driven change and disruption accelerate. To remain on the right side of the divide, CIOs must master the art of leveraging continuous change as it emerges in the form of technologies, personal and social trends, and market forces.

Summary of External Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **DX delta:** Leaders and disruptors widen performance gap
- **Sense, compute, actuate:** The new data-centric paradigm
- **Platform disruption:** Unleashing digital innovation's power for scale
- **Cyberthreats:** Theft, ransom, and cyberattack on the rise
- **Innovation impasse:** Legacy systems constraining transformation

Predictions: Impact on Technology Buyers

Prediction 1: By 2018, 75% of CIOs Will Put Experiential Engagement, Data Monetization, or Digital Business at Scale at the Top of Their Agenda

In IDC's most recent *CIO Sentiment Survey* of 150 IT executives in the United States conducted in the summer of 2017, we found that creating new business models and developing new digital revenue streams ranked first in importance for CIOs; improving their customer's experience ranked second for their top DX objectives. This follows a trend we have been predicting and monitoring over the past couple of years. Interestingly, we find that organizations that fall into the digital resistor category of DX have the highest percentage of CIOs stating that the creation of new business models is their top

priority (71%). Meanwhile, we see that organizations falling into the digital transformer and digital disruptor categories of DX are moving their focus beyond new business models to integrated customer experiences (CXs) with 71% and 69%, respectively, posting experience as their top priority.

This shift demonstrates that the majority of CIOs have begun down the path of transforming their data and business operations to handle what's necessary to be successful in the DX realm. For organizations to thrive in this new digital realm, it will be necessary for them to reorganize their infrastructure, operations, and talent to take advantage of new capabilities and change their focus to attain full transformation.

Associated Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Sense, compute, and actuate:** The new data-centric paradigm
- **Platform disruption:** Unleashing digital innovation's power for scale

IT Impact

- IT will have to develop new service catalogs with "as a service" tools and capabilities to support customer-facing product/service requirements and the ability to blend digital and physical assets to enable commerce embedded in the "stream of life."
- Data must be managed as a valuable asset and transformed to drive the creation of new digital revenue streams.
- CIOs need a data strategy that goes beyond business operations and marketing to focus on product and customer experience applications.

Guidance

- Plan and begin creation of DX capabilities — including platforms, technologies, processes, governance, talent, and data components — that will empower the enterprise.
- Plan for staff retraining and/or outsourcing to accommodate for retirement of old technologies and systems.
- Work closely with LOB executives to prioritize, plan, and execute initiatives to ensure focus and alignment.
- Make sure that technology adoption decisions are guided by frameworks that help make trade-offs among technology maturity, risk profiles, and business opportunities.

Prediction 2: Through 2019, Dragged Down by Conflicting Digital Transformation Imperatives, Ineffective Technology Innovation, Cloud Infrastructure Transition, and Underfunded End-of-Life Core Systems, 75% of CIOs and Their Enterprises Will Fail to Meet All of Their Digital Objectives

The clear majority of IT organizations recognize the need to digitally transform their business. These organizations seek to take advantage of technological advancements available today and compete with external competition; furthermore, they must keep pace with internal competition from business constituents that are not willing to wait on an extended IT timeline to accomplish their business goals. Most organizations have taken on multiple innovation and transformation projects to meet current and future needs. However, many organizations have undertaken these transformations in a piecemeal fashion, creating innovation groups that do not integrate and incorporate lessons learned back into their overall IT development and infrastructure planning. IT organizations also buckle under the combined strain of aging systems and infrastructure and the urgent need to transition to the cloud.

This lack of comprehensive infrastructure, development, and talent planning will leave many IT organizations, and the CIOs who run them, in a difficult position. In the next few years, these IT organizations and their leadership will falter under the strain of legacy systems that have not been addressed as part of their new innovation cycles. And they will be shackled by a disjointed workforce with individuals who have not been brought into the innovation space and do not have the requisite skills needed to maintain a pace of innovation now expected by the business.

To avoid this organizational failure, CIOs need to adopt a Leading in 3D (L3D) mentality that continuously cycles through innovation, integration, and incorporation to ensure that all systems are part of the digital transformation and that all existing and future talent is part of the transformation. Only then will the organization succeed in completely transforming and becoming an innovation engine for the entire company.

Associated Drivers

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- **DX delta:** Leaders and disruptors widen performance gap

IT Impact

- Most IT organizations are dragged down by legacy environments that are rigid and absorb IT resources needed for innovation initiatives, leading to a dearth of IT innovation just when it is most needed.
- Succeeding at digital requires many trials and many failures before the delivery of real success; learning from failure is the differentiator between business and IT success or failure.
- IT will become operationally focused and less valuable to the business, and IT organizations will become demoralized, leading to loss of key staff.

Guidance

- Educate the executive team and the board about the information and technology challenges inherent in transforming the enterprise; champion a digital governance model.
- Build a leading organization and create a culture where failing forward is part of success.
- Bring new thinking to approaches for replacing legacy systems and environments to minimize the drag on the organization.
- Create a strategy to move from point solution initiatives to a broader, more connected, and holistic approach to DX.

Prediction 3: By 2020, 60% of the CIOs Who Have Crossed the Digital Divide Will Prevail in C-Suite Turmoil and Competition to Become Digital Business Leaders for Their Enterprises

Crossing the digital divide is a jump into the unknown for the CIO and his or her staff. Many companies from different sectors such as finance, manufacturing, or services are now declaring that they have become "technology companies." For the IT leadership team, the ability to lead change will often be closely related to its ability to change its own role and adapt to the new requirement of advancing the business, not just its technology underpinnings. The organizations that take on this "technology company" mantra must shift from "technology only" IT executives to C-suite leaders who transform the business via new business and operating models. Many organizations will fail to achieve success in digital transformation because of unwieldy governance and lack of proper incorporation and integration

of their innovation engines into all aspects of their organization. The CIOs who fully succeed in DX will be those who have taken an L3D approach to transform not only their IT organizations but also their businesses. Their success will be based, in large part, on their ability to balance entrepreneurial, "take charge" behaviors with relationship building based on education, trust, and delivering on commitments with their business peers. From these connections, CIOs will get more easily invited to partner in key initiatives.

Associated Drivers

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IT Impact

- As digital transformation scales and grows in importance, technology leaders must become digital business leaders by creating technology capabilities that enable digital revenue.
- IT will be elevated to a more strategic role along with increased scrutiny of IT activities.
- CIOs who become business leaders will have to create added value through partnerships with LOB executives.

Guidance

- Make digital technology an integral part of business and operational strategies, and link digital initiatives to organizational performance.
- Lead by example to create a culture of technical innovation and collaboration.
- IT operations will need to be managed by trusted IT executives with minimal CIO involvement.
- CIOs should budget ample time to spend with key customers, both internal and external, to keep focused on creating customer-focused products, services, and experiences.

Prediction 4: By 2019, 60% of CIOs Will Complete Infrastructure and Application Replatforming Using Cloud, Mobile, and DevOps, Clearing the Deck for Accelerated Enterprise Digital Transformation

One of the most critical actions CIOs must take in the run-up to digital transformation is "clearing the decks" by replatforming legacy systems with cloud and mobile replacements, using agile and DevOps to accelerate those efforts. Legacy systems not only pose a resource drain but also limit access to critical data and services, hinder integration with new digital systems, and draw attention away from key digital initiatives. IDC recently interviewed a CIO at a large enterprise who, having recently completed replatforming his legacy systems via a cloud migration, announced that his organization was "at a new starting line" for digital innovation and transformation. Not only does the new cloud/mobile environment "clear the clutter" that soaked up time and resources but it also serves as a springboard for future digital innovation. In IDC's most recent *CIO Sentiment Survey* of 150 IT executives in the United States conducted in the summer of 2017, "rationalization of legacy systems" and "avoiding the sprawl of uncontrolled innovations solutions" were identified as among the top 4 challenges for IT and IT's two greatest weaknesses, pointing to the need for additional focus and creativity on the part of CIOs.

Associated Drivers

- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **Platform disruption:** Unleashing digital innovation's power for scale
- **Innovation impasse:** Legacy systems constraining transformation

IT Impact

- Digital transformation requires real-time or new-real-time data, modular services, and elasticity in volume, none of which can be served by legacy applications platforms or custom applications.
- Modern infrastructure built on a manageable platform that can sustain increasing and evolving needs is table stakes for participating in the digital economy.
- CIOs will be able to shift funds and attention to new DX initiatives, improving IT's standing with business leaders.

Guidance

- Create an application rationalization capability and maintain an evergreen environment by making rationalization a continual part of doing business.
- Commit resources for reskilling of IT workers to use new platforms and technologies.
- Ensure that digital platforms are easily accessible and usable by LOB organizations and that adequate IT expertise and support is available.

Prediction 5: By 2019, 60% of IT Organizations Will Deploy DX Platforms Supporting New Customer- and Ecosystem-Facing Business Models

The trend of IT organizations supporting externally facing digital platforms continues this year and will accelerate over the next two years. We see the percentage of digital business being addressed by IT continuing to increase, with surveyed CIOs expecting their level of digital business revenue to hit 40% in the next three years, based on our latest *CIO Sentiment Survey*. This coincides with CIOs' view of their top DX objectives as focusing on creating improved and new engagement models for customer experience and creating new products that will generate revenue streams in the digital space.

Successful IT executives have already begun this journey, and we will see many IT organizations follow this path over the next two years, allowing them to take full advantage of DX as a powerful tool. To accomplish this, IT organizations need to shift from an operations focus to a business focus in relation to both technology and talent management. Beyond new digital technologies, customer-facing products, services, and digital experiences require a host of new skill sets ranging from user experience (UX) and CX design to data analytics to ethnographic research and beyond. IT talent pools will need to be realigned to ensure that the IT organization has the business and design acumen necessary to successfully navigate the waters of creating new, customer-focused models for diverse audiences.

Associated Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **Platform disruption:** Unleashing digital innovation's power for scale

IT Impact

- IT must partner with LOB executives to conceptualize, build, and operate a digital platform with reusable business, technology, and data components.
- CIOs need to connect a diverse mix of employees, customers, and partners in secure collaboration environments.
- Integration of systems, services, and data from internal and external sources and providers will become a key competency for IT.

Guidance

- Create a DX vision and an IT strategy congruent with the need of your enterprise digital transformation strategy.
- Design a digital enterprise platform that incorporates all the components including core IT, data, integration, and engagement layers.
- Build expertise in APIs, SDKs, and microservices to enable broad access to platform services both inside and outside the enterprise.

Prediction 6: By 2019, 75% of CIOs Will Refocus Cybersecurity Around Authentication and Trust to Manage Business Risks, Initiating the Retirement of Systems That Cannot Ensure Data Protection

The concept of one-size-fits-all security is well past for IT organizations. Now, they look to create a secure environment that protects current and future systems from the ever-increasing volatility of security threats while maintaining a level of user experience that is palatable for the average user. This balance will require legacy systems to be upgraded, modified, or retired as CIOs enhance security to allow for proactive defense of the overall network from datacenter to device. This approach will be based on the concept of "patch independence" and allow for dynamic gateways to provide real-time reporting of suspicious activity and constantly measure system trustworthiness.

Security levels will adjust as needed based on levels of risk to the system with reporting determining real-time actions taken based on trust level and impact level. Systems that cannot be adjusted to meet these needs will be replaced or retired; they will cause an unacceptable level of burden on the overall infrastructure, with risks outweighing rewards.

Associated Drivers

- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **Cyberthreats:** Theft, ransom, and cyberattack on the rise
- **Innovation impasse:** Legacy systems constraining transformation

IT Impact

- Passive approaches to security by building excuses or minimal compliance are becoming untenable.
- CIOs and IT organizations must build trust in enterprise systems and earn a mandatory security label to conduct business.
- Legacy systems that cannot be secured and trusted, both inside and outside the enterprise, will have to be replaced.

Guidance

- With the rise of theft, ransom, and cyberattacks, CIOs must implement strong proactive measures to guaranty security and build trust in their brand.
- CIOs must enforce new policies mandating security compliance or force system exclusion from the network.
- In the management of business risks related to technology, a minimal core including authentication must be implemented completely.

Prediction 7: By 2020, 40% of CIOs Will Leverage Vision- and Mission-Driven Leadership to Inspire and Empower Their Organizations to Create Digital Transformation Capabilities

IT organizations face a continuing onslaught of challenges and opportunities, and many are starting to resemble marathon runners at the 25-mile marker. That places the onus on CIOs to inspire their troops to dig deep and persevere. That, in turn, requires that CIOs create compelling digital visions and missions and engage IT workers to carry them forward. Proactive CIOs will work not only to transform their infrastructure and systems but will look to transform their overall workforce to become digitally inspired groups focused on the needs of the business/customer rather than the needs of existing projects or systems. This will lead to a shift from operational thinking to innovational thinking throughout the organization, providing organizations with the ability to transform existing systems as well as creating new customer-facing interfaces based on existing data and systems.

The beginnings of this transformation are already starting to take hold. Our latest *CIO Sentiment Survey* shows that 62% of surveyed IT executives have created a dedicated Office of Digital Transformation to change how their organizations function. This idea of formalizing the governance of digital transformation from the top down and providing an executive-backed organizational transformation office signals that these executives are going beyond the basics of creating innovative projects to changing their overall structural thinking for IT.

Associated Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **DX delta:** Leaders and disruptors widen performance gap

IT Impact

- CIOs will have to become more effective at inspiring and influencing, not just directing and orchestrating.
- IT capabilities require many components, including technology, processes, talent, governance, and data to work in harmony heightening the need to break down silos in IT and the business.
- IT management and staff will need to add business focus to their planning and deliverables.

Guidance

- Create a DX capabilities strategy and prioritized plan that ties IT work to the mission, vision, and goals.
- Empower staff to focus on business outcomes, not just technology development.
- Build competencies in creating compelling purpose and mission-driven visions.

Prediction 8: Recognizing the Failure of Existing IT Governance and the Need for a Shared Digital Transformation Vision, by 2020, 40% of CIOs Will Adopt New Digital Governance Models to Accelerate Innovation and Speed

One challenge for CIOs and LOB executives in DX is that of attaining speed and agility in innovation and execution while still maintaining enough oversight and control to keep initiatives from "going off the rails" — in other words, "light governance." Central to the concept of light governance is the notion of shared visions and goals coupled with continuous and transparent communication to maintain coordination and alignment of DX work across the enterprise. Communication will be a driving factor for the successful CIO over the next few years. Communication within the organization and across the business units will be necessary to establish a complete vision that allows for digital transformation to move from having a foothold to being a true agent of change emanating from within IT. To accomplish this, CIOs will need to empower and encourage their management teams to create an overall structure that breaks down silos internal to IT as well as outside to their business counterparts and customers. Organizations will work on concepts and data-sharing models that provide a consistent vision of DX across organizations and a governance model that is flexible and incorporates individuals from numerous disparate groups.

This model will allow these executives to quickly and easily modify projects and planning based on the ever-changing needs of today's marketplace. This model will also allow for innovation to be shared throughout the IT organization. Further, with a shared vision, the IT organization and business organizations will be working from the same playbook and can understand each other's needs without animus, thereby reducing the sprawl of shadow IT as IT becomes a trusted partner in the achievement of the overall goals of the company.

Associated Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **DX delta:** Leaders and disruptors widen performance gap

IT Impact

- The IT environment must be nimble, allow reuse, and limit redundancy and inefficiencies.
- Governance by senior executives will become lighter and focused on higher-level goals.
- Transparency will become critical in ensuring that stakeholders are informed about key actions and decisions.
- Trust will need to become a "currency" of the IT organization and the enterprise.

Guidance

- Adopt a ubiquitous cross-functional approach to DX, with horizontal roles for architecture, services, and IT.
- Create a governance framework that defines authority and roles from top to bottom of the organization.
- Establish forums and venues to communicate decisions, actions, and outcomes across the enterprise.

Prediction 9: By 2018, 70% of CIOs Will Take Agility to the Next Level, Gearing Up to a Product Model Using Design Thinking and DevOps

As businesses digitally enable products, services, and operations, they face new expectations from customers including desire for continuous extension, update, and improvement after purchase takes place. Moreover, with competition swirling, speed to market and creation of products that customers want become imperatives. All these forces signal the need for new approaches to product design and development. As more organizations understand the need for constant, almost real-time, updates to systems expected in today's work and consumer environment, successful IT organizations are continuing to make the shift from waterfall to agile development. The clear majority of organizations will make this their primary practice over the next year. We have seen in our most recent IDC's *CIO Sentiment Survey* that agile became the preferred approach for all projects for 45% of respondents, a sharp contrast with the past surveys where agile was primarily used only for innovation. That same survey found the majority of CIOs reporting the use of design thinking. The shift to agile and DevOps thinking is also playing a larger role in the application rationalization area. Here, organizations are having to make determinations about legacy systems that may not be up to the shift to this type of development and deployment. This is forcing organizations to rethink their application portfolios and the mix of onsite and cloud-based systems in their organization.

Associated Drivers

- **Accelerating DX:** Technology-centric transformation altering business and society
- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **Platform disruption:** Unleashing digital innovation's power for scale

IT Impact

- Continuous development, integration, and delivery will initially stress IT organizations but will become a way of life.
- IT will be able to develop more desirable products and services that drive increased usage.
- CIOs will have to become more entrepreneurial, functioning like start-up CEOs.

Guidance

- Enable design models and artifacts creation to explore new products or business models providing the enterprise with an environment focusing on experience.
- Use a prototyping approach as a way to communicate and collaborate with all stakeholders.
- Fully adopt and embrace agile, lean, and design thinking practices for maximum benefit.

Prediction 10: By 2020, 60% of CIOs Will Implement an IT Business Model and Culture That Shifts Focus from IT Projects to Digitally Oriented Products

Building an IT organization that is product focused is both challenging and liberating; it simultaneously drives customer centricity while encouraging IT staff to create products and services, using design thinking and other tools, to increase the desirability of offerings. Project management has been king in IT organizations for decades, but more recently, there is a broad shift as IT organizations are often now developing products that will impact not only their organization but the bottom line of the company. This is causing CIOs to change IT organizations to be more product focused, blurring the lines between IT and business. With 62% of IT executives in our *CIO Sentiment Survey* stating that the creation of new business models and development of new digital revenue streams were at the top of

their DX objectives for the next year, it is understandable that organizations are looking to change the way their workforce views the projects they are working on.

This shift goes to the heart of another issue faced by IT organizations where our *CIO Sentiment Survey* found one of the main challenges facing organizations today is the search for the right talent to deliver on DX. As IT organizations shift from a more technical mindset to a product-focused mindset, they need individuals with business acumen who understand technology; this will create a shift in culture that will impact both hiring of new individuals and the existing workforce.

Associated Drivers

- **Pace of change:** Technology capabilities enable sustainable change at the speed of digital business
- **DX delta:** Leaders and disruptors widen performance gap
- **Platform disruption:** Unleashing digital innovation's power for scale

IT Impact

- IT staff steeped in traditional project management will struggle to adopt product management approaches.
- Product models will help drive end-to-end ownership of IT products and services.
- Business models will help identify new, nontraditional innovation and funding approaches.

Guidance

- Create horizontal roles of product owners, coaches, and architects for both customer-facing and internal initiatives.
- Create and colocate cross-functional product teams to encourage collaboration and knowledge sharing.
- Define product management roles and train staff in product development competencies.
- Create business models for key IT and DX functions and initiatives.

ADVICE FOR TECHNOLOGY BUYERS

CIOs are facing starkly contrasting futures for themselves, their IT organizations, and their businesses. They have two choices: continue working as they have in the past or adopt new, sometimes radical ways of thinking and working. The former approach relegates them (and their businesses) to being "also ran's" that, with luck, can survive but will never thrive. The second approach appears riskier, but it is not. Even partial success in digital transformation is better than the slow death of inaction. The predictions and advice in this document are daunting. While they are meant to be absorbed as a whole, they are not intended as a recommendation for wholesale "burn the boats" change. Instead, CIOs are counseled to take a measured approach – starting with discussions with business peers, IT staff and management, and partners – to begin the journey of shaping, then implementing, the digital future of the organization.

EXTERNAL DRIVERS: DETAIL

Accelerating DX: Technology-Centric Transformation Altering Business and Society

Description: Digital transformation refers to the continuous process by which enterprises adapt to or drive disruptive changes in their customers and markets (internal and external ecosystems) by leveraging digital competencies to innovate new business models, products, and services that seamlessly blend digital and physical and business and customer experiences while improving operational efficiency and organizational performance.

Context: In the past few years, we have witnessed the rise of digital transformation and the disruptions and opportunities it poses for traditional businesses and society. Organizations of every size and industry risk fundamental disruption because of new technologies, new players, new ecosystems, and new ways of doing business. Early success is met by the subsequent challenge of achieving digital business at scale. Business disruptions cascade into societal disruptions. IDC predicts worldwide spending on digital transformation technologies will expand at a CAGR of 17.9% through 2021 to more than $2.1 trillion.

Pace of Change: Technology Capabilities Enable Sustainable Change at the Speed of Digital Business

Description: Today, survival of the fittest is not linked to size or strength but the ability to change. While digital transformation accelerates globally, the half-life of companies shrinks, disrupted by new business models and 3rd Platform technologies. The imperative is not just keeping pace with business change but also increasing the speed of business operations. In an attempt to go faster, organizations struggle under a forest of silos and business innovations stagnate with redundancy and inconsistency. Companies that don't adapt will become part of the carnage, while leaders get further ahead by rationalizing and integrating their data and applications and leveraging DX capabilities to move faster and deliver better products and services.

Context: Over the past 50 years, the average life span of S&P 500 companies has shrunk from around 60 years to closer to 18 years. The rate of change is accelerating dramatically. Time to decide and act requires near-frictionless, fact-based decision-making processes. To survive, companies not only have to be digital transformers but must do so while improving adaptability and adopting changes. Digital capabilities provide modular, plug-and-play technology, business, and industry platforms, allowing businesses to quickly adapt and compete in digital transformation.

DX Delta: Leaders and Disruptors Widen Performance Gap

Description: The best-performing companies, armed with digital-native culture, tools, and process, are pulling away from the rest, creating a bifurcated and unequal landscape where a few firms exhibit high productivity and profits. Digitalized sectors are the most profitable as firms adopt new technologies and deliver winning products and services more efficiently. Having disrupted one sector, firms attack adjacencies to expand their markets and then protect their status through mergers, acquisitions, and R&D.

Context: The gap is widening more and more quickly between the thriving companies – the best performers – and the survivors – those companies just hanging on. Thrivers, undergoing continuous self-disruption and innovation, are leveraging their capabilities to create new digital products and services, expand digital ecosystems, and foster digitally savvy workforces. While they experience

double-digit growth in productivity, market share, and revenue, others are flat or declining. Technology-literate leadership, vision, and organizational and culture change are key to any digital business at scale.

Sense, Compute, Actuate: The New Data-Centric Paradigm

Description: While data is at the core of the new digital economy, it's about how you sense the environment and manage the data from edge to core to cloud, how you analyze it in near real time, learn from it, and then act on it to affect outcomes. IoT, mobile devices, big data, machine learning, cognitive/AI all combine to continually sense and collectively learn from an environment. What differentiates winners is how they leverage that to deliver meaningful, value-added predictions and actions for personalized life efficiency/convenience, improving industrial processes, healthcare, experiential engagement, or any enterprise decision making.

Context: Clive Humbly is credited with the statement "Data is the new oil" (2006). But, like raw crude, value is only realized when it is extracted and processed. By the end of 2017, revenue growth from information-based products will double the rest of the portfolio for one-third of Global 2000 companies. Large and diverse data sets create new challenges, but when combined with AI technologies and exponential computing power, they create ever greater opportunities. Any application, process, service, or organization that isn't part, or all, of the new "sense, compute, actuate" paradigm is simply missing the boat with digital transformation.

Platform Disruption: Unleashing Digital Innovation's Power for Scale

Description: The "platform" is the new battleground for innovation, developers, and marketplaces. "Going it alone" is obsolete. Powerful network effects continue to entrench leaders and extend reach. Industry platforms layer on digital business platforms built on technology platforms. Market consolidation limits choices but increases the power to consumers, as a critical mass of partners, customers, and solutions converge. Megaplatforms, fueling innovation, demand a widening cloud-based ecosystem, network, and business platform of connected things, channels, technology, data, and talent.

Context: Platforms have long played a key role in the IT industry. We are in a platform economy – one in which tools, capabilities, and frameworks based upon the power of information, cognitive computing, and ubiquitous access will frame and channel our economic, business, and social lives. The platform concept expands from microservices, technology stacks, and software bundles to PaaS to entirely new digital business and industry-specific platforms, ecosystems, and operating models.

Cyberthreats: Theft, Ransom, and Cyberattack on the Rise

Description: The dark net and hacker networks continue to grow and get more organized. Cybercrime hits a massive scale, as illustrated by the WannaCry debacle, highlighting inadequate attention to basic security practices. Comparatively, the cloud looks pretty secure. While vigilant security practices can protect against most threats, government and private institutions are actively using their digital power and weapons to affect outcomes. Bots and misinformation drive political and social change and divisiveness. The digital arms race expands as 3rd Platform technologies become tools or countermeasures to extend or resist coercion.

Context: Data breaches and cybercrime are in the news every day, followed only by state-sponsored cyberactions. IDC forecasts that global spending on security solutions will reach almost $105 billion in 2020, with a CAGR of 8.7%. "Contain and control" approaches, augmented with cognitive computing,

replace outdated "protect and defend" models. Security initiatives need to employ new technologies and approaches to evaluate and mitigate the new array of risks while ensuring privacy, confidentiality, integrity, and availability.

Innovation Impasse: Legacy Systems Constraining Transformation

Description: Technology has been enabling business for decades, and refreshing deployed systems has always been problematic. American businessman Dee Hock said, "The problem is never how to get new, innovative thoughts into your mind, but how to get old ones out." This is true about digital transformation as well. Organizations are burdened with old systems that "run the business." Most cannot be retrofitted to the new digital ecosystem, leaving organizations with the unpleasant choice of either constraining their DX initiatives and environments or embarking on an expensive and disruptive upgrade of critical systems.

Context: Many organizations today are facing the challenge of maintaining or modernizing their trusted operational systems of record (SOR). Yet decades of changes have built up technical debt, making those systems fragile and expensive. Systems of engagement (SOE) don't go far enough to meet new customer expectations but add to the debt and complexity of upgrading and the challenge of integrating existing systems with new digital transformation services. Legacy constraints and incremental fixes won't cut it any longer. Upgrades to intelligent, cloud-based systems offer the opportunity to leapfrog ahead. Doing so is problematic and expensive. Not doing so may be suicidal. Leading organizations are prepared to leave legacy behind where it is no longer relevant.

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Global Headquarters

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