

REPORT: SURVEY

Constellation Research 2017 Digital Transformation Study

**New Data Shows AI and IoT Are Driving Digital
Transformation Efforts**

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EXECUTIVE SUMMARY

This report presents findings from the 2017 Digital Transformation Survey conducted by Constellation Research.









Constellation asked survey respondents about the key drivers for their current digital transformation projects, both in terms of process change and IT investment, particularly in leading-edge technologies.

One hundred five people completed the survey during 2017. Responses were collected on Constellation’s website and ZDNet.com. Responses were also collected from Constellation’s subscriber base.

Methodology

Constellation received 105 responses to an online survey, getting answers from respondents in a diverse range of job roles. About 18 percent of respondents self-identified as CEOs, followed by line-of-business managers (20 percent) and IT managers (16 percent). Responses were collected on Constellation’s website and ZDNet.com. Responses were also collected from Constellation’s subscriber base.

Business Themes

| | | | |
|---|--|---|--|
|  The New C-Suite |  Digital Marketing Transformation |  Matrix Commerce |  Technology Optimization |
|  Data to Decisions |  Future of Work |  Next Gen Customer |  Digital Safety and Privacy |

RESULTS FROM THE CONSTELLATION DIGITAL TRANSFORMATION SURVEY

Until recently, digital transformation was pursued mainly by leading-edge enterprises or specialized “innovation departments” within organizations. Today, digital transformation is recognized as vital to the success of the enterprise, and the data from this year’s survey shows a majority of organizations are pursuing organization-wide digital transformation led by the C-suite. Meanwhile, the frontrunners of digital transformation seek to build on the groundwork they have in place by experimenting with emerging technologies such as artificial intelligence (AI), blockchain and the Internet of Things (IoT).

The Constellation Digital Transformation Survey asked C-level executives about the priorities of their digital strategy, recent investments in emerging technologies, near- and medium-term goals and hurdles to initiatives. Many respondents indicate that their digital transformation strategies are designed to enhance customer engagement,

signaling an understanding that digital approaches are essential for driving profits. A large majority of executives say they are investing in IoT, while a minority of executives say they are investing in AI. Due to changes in the market, Constellation expects investment in AI in 2018 to be comparable to investment in IoT in 2017. Respondents also identify a common concern: as more organizations pursue digital initiatives, they may find themselves engaged in wars for talent. Sixty percent of executives say people will become more valuable as companies scale up their digital initiatives.

DIGITAL TRANSFORMATION GOES MAINSTREAM

Digital transformation was a top priority for early adopters and fast-follower enterprises through 2016, and data from this year’s Constellation Digital Transformation Survey indicates digital transformation moving to the mainstream. A majority of organizations report not only ongoing investment in digital technologies but also a commitment to business model innovation, usually directed

by a C-level executive. Seventy percent of those surveyed by Constellation say their organization had a digital transformation strategy in place (see Figure 1), either company-wide or in key departments.

Constellation's POV

When asked which executives or managers are leading their organizations' digital initiatives, respondents identify a wide range of roles across the C-suite and below. Perhaps most notably, 29 percent of respondents say their organization's digital transformation strategies are led by the CEO, while only 8 percent of

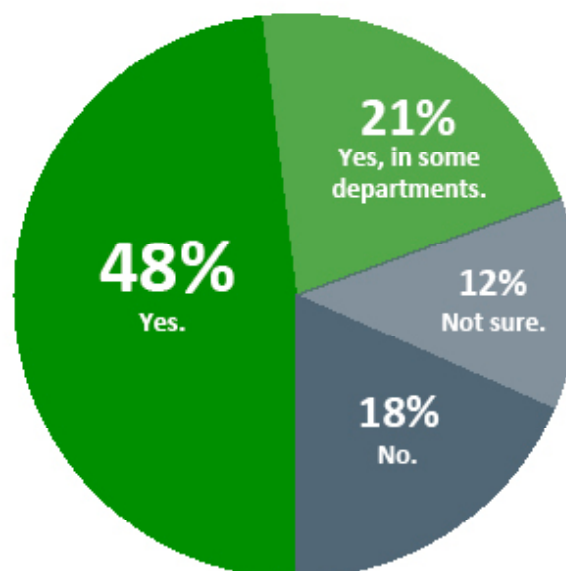
respondents say those strategies are led by the organization's chief digital officer (CDO). This data, which shows CEOs are more directly involved in digital transformation than any other executive, indicates a recognition among enterprises that a digital strategy is vital to the success of the entire organization.

A further indication that digital transformation is going mainstream is the emphasis that organizations are placing on customer engagement when designing their digital strategies. Forty-one percent of respondents say customer engagement was the main goal of their digital efforts. This signals a growing

Figure 1. Digital Transformation Goes Mainstream.

Does your company or organization have a defined digital transformation strategy?

Nearly 70 percent of respondents indicate they had a digital strategy in place either company-wide or in key departments.



Source: Constellation Research

effort to implement digital business models throughout the business and a growing recognition of the potential for digital strategies to drive profits.

CEO Prominence in Digital Transformation Signals Shift to Digital Business

Twenty-nine percent of survey respondents indicate that their CEO leads their organization's digital transformation strategies—more than any other C-level role (Figure 2). Constellation interprets this data as evidence that more organizations

are recognizing the strategic importance of digital transformation, so much so that the organization's top executive is personally overseeing digital strategy. However, respondents also identify C-level executives with technical roles leading 45 percent of all digital transformation strategies, with CIOs leading 19 percent, CTOs 17 percent and CDOs 8 percent.

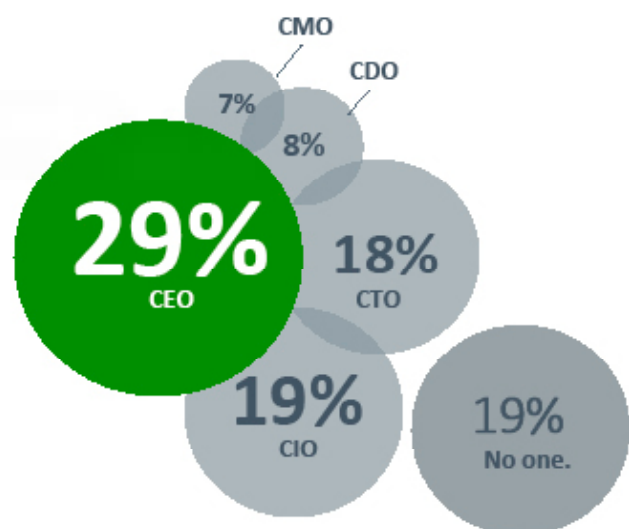
Constellation's POV

In working with C-suite executives who are leading digital transformation, Constellation analysts have found that digital transformation

Figure 2. CEO Prominence Signals Shift to Digital Business.

Who leads your company's digital transformation strategy?

Twenty-nine percent of respondents identify the CEO as the leader of digital transformation strategies, more than any other C-level role.



Source: Constellation Research

means something different to each executive in the C-suite. CIOs plan for enterprise agility and craft IT capabilities to support new business models. CTOs explore new technological roadmaps and consider how to apply consumer technologies to meet enterprise requirements. CMOs consider how digital technologies change the customer experience. To the CEO, digital transformation generally means transitioning the organization to a digital business model as the industry changes.

In the 45 percent of digital transformation efforts led by C-level executives with technical roles (CIO, CTO, CDO), strategies are most likely geared toward IT modernization, the creation of digital tech designed to be deployed externally or digital transformation pilot projects.

Although only 8 percent of respondents identified the CDO as the leader of their organization's digital efforts, Constellation analysts nonetheless expect the CDO to play a prominent role in digital transformation in the coming years. The lesser prominence

of the CDO in this year's survey may be attributable to some organizations not having a CDO position or having a CDO who reports to another executive in the C-suite. Looking forward, Constellation expects that more organizations will bring on CDOs to take responsibility for the implementation and key performance indicators of a digital strategy. As digital initiatives continue to integrate into the business, the CDO will eventually report to the CEO on matters pertaining to the implementation of new business models or the CIO on matters pertaining to the improvement of technology.

With 29 percent of respondents identifying the CEO as the leader of digital transformation efforts, the survey also indicates a shift in the focus of such efforts. In the past, many digital transformation projects were pilot programs, often conducted by a single team or department in an organization, so that the initiatives could be tested while insulating the rest of the organization from potential disruptions. In most cases, these pilot programs were led by a digital executive.

As an enterprise's digital strategy matures, the digital pilot programs are incorporated into the rest of the business. With this integration, programs that once were insulated from the broader business become essential to the success of the business as a whole. The finding that 29 percent of respondents identify the CEO as the leader of their digital transformation efforts corroborates this increased significance of digital programs.

As digital programs take a greater role in business strategy, digital strategies likely will be led from the top by the CEO, with the entire C-suite evolving to become digitally literate. Eventually, as more of the organization's operations and business model become digital, the CDO role may be phased out as organizations complete their digital transformations.

Focus on Customer Engagement Reveals Recognition of Business Value

Forty-one percent of respondents to this year's survey say the most important goal of their digital transformation strategy was to reach

and engage with customers more effectively. Another 23 percent cite a similar reason: to give better visibility into the business and increase revenue. Only 27 percent name cost-cutting and modernizing IT as the top driver.

Constellation's POV

The survey data indicates that digital transformation is no longer viewed merely as an experiment in disruptive technologies or as a one-off innovation project—it has become an essential part of the growth and value strategy for many organizations. A majority of respondents identify business growth or customer engagement as the primary goal of their digital transformation strategy, while a minority of respondents describe their primary goal as modernizing IT systems or cutting costs (Figure 3).

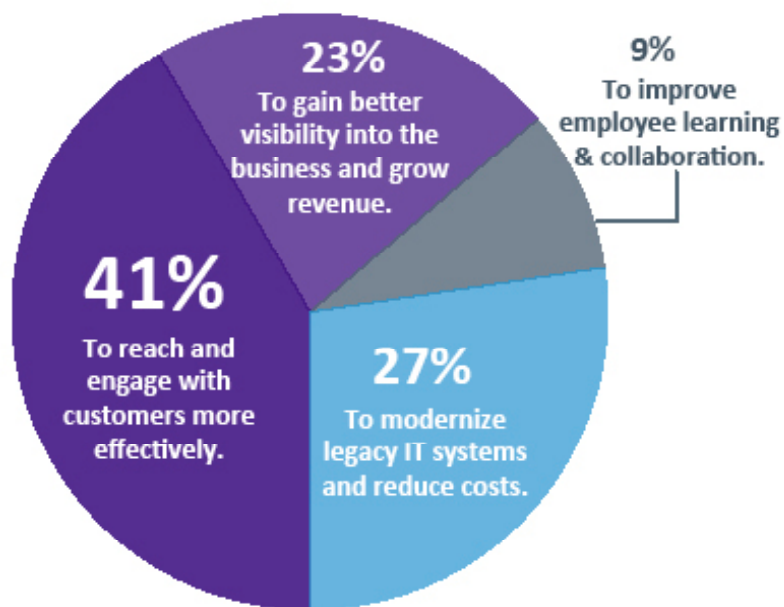
DIGITAL TRANSFORMATION IN THE ERA OF AI

In this year's survey, Constellation sought to understand organizations' investment in emerging technologies integral to realizing

Figure 3. Digital Transformation Strategies Linked to Business Value.

What is the most important goal of your organization's digital transformation strategy?

Sixty-four percent of organizations recognize digital transformation as essential to driving profits.



Source: Constellation Research

the potential of digital business. Constellation polled respondents on their organizations' awareness and adoption of IoT, AI, synchronous ledger technology (blockchain), big data and cloud technology.

IoT Today, AI in 2018

The survey shows that many organizations are charging ahead with investments in IoT while remaining cautious about AI.

Nearly half of respondents say their organization either had an established IoT strategy with applications in production (19 percent) or have pilot projects underway (28 percent) (Figure 4). In contrast, just 25 percent of executives say they are investing in AI (Figure 5).

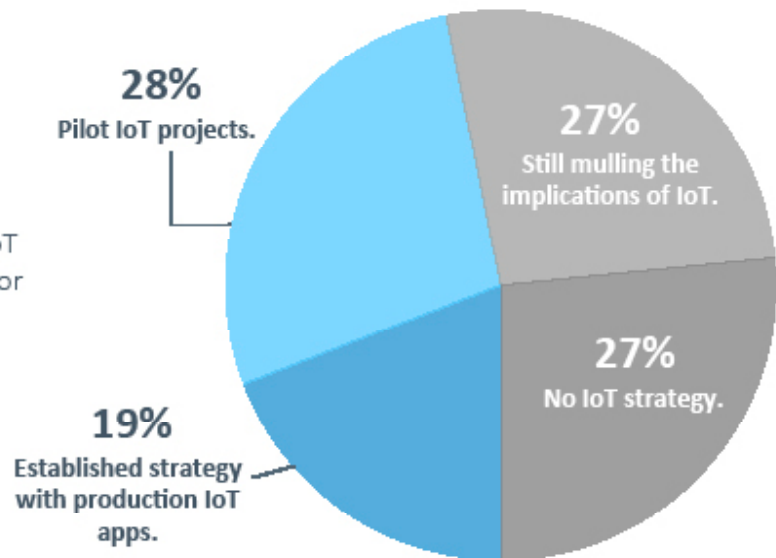
Constellation's POV

Organizations use IoT to transition from selling products to selling services or outcomes.

Figure 4. Charging Ahead with Investments in IoT.

What is your organization's stance on the Internet of Things?

Nearly half of respondents say their organization either had an established IoT strategy with applications in production or have pilot projects underway.

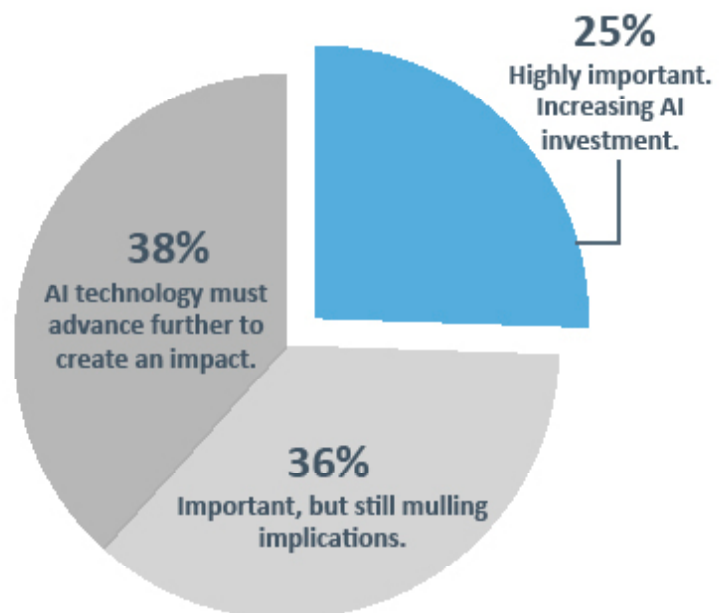


Source: Constellation Research

Figure 5. Cautious About AI for Now.

Describe your organization's view of AI with respect to business processes.

Just 25 percent of executives say they were investing in AI.



Source: Constellation Research

Selling services or outcomes in an automated (or self-service) manner is one of the defining aspects of digital business. The enthusiastic investment in IoT signals that more businesses are making the transition to digital by employing IoT to change their business models to sell services or outcomes.

However, Constellation expects that by 2018 the predominant area of experimentation and investment in technology will be AI.

The growing availability of AI development kits and frameworks such as Caffe, Caffe2, Google's TensorFlow, Microsoft Azure, and IPsoft's Amelia will enable an increasing number of organizations to experiment with AI. As a result of this experimentation, a flurry of new, competitively priced products will enter the market, enabling even more organizations to take advantage of AI.

Expect more robust digital business models after organizations begin implementing both IoT and AI. IoT is the technology that enables organizations to transition from selling products to selling services or outcomes.

AI provides self-refining intelligence that allows systems to better understand and fulfill customers' needs over time. Together these technologies provide the foundation for fully functional, intelligent digital business models.

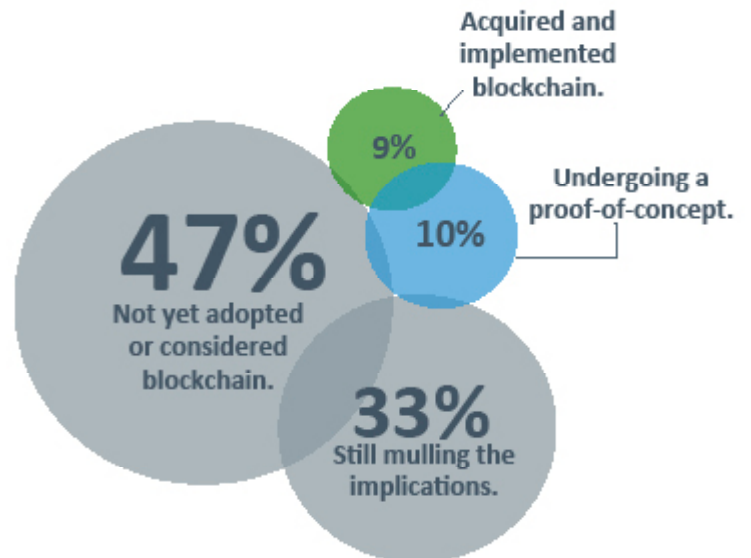
Blockchain's Potential Awaits Market Standards and Catalysts

First-generation blockchain and its descendant technologies, called synchronous ledger technologies (SLT), received much attention from early adopters and the press in 2017. Yet many organizations are hesitant to invest in this emerging technology, which promises to do everything from preventing double spending of digital cash to verifying digital identities. About 47 percent say their organizations had not considered or adopted any blockchain technologies. Another 33 percent say they remained in the investigatory phase, while only 10 percent were running proof-of-concept exercises and just 9 percent had completed an implementation (Figure 6).

Figure 6. Blockchain Remains Enigmatic.

Describe your organization's adoption of blockchain and SLT.

Less than 20 percent of respondents have invested in blockchain or synchronous ledger technologies (SLT).



Source: Constellation Research

Constellation's POV

First-generation blockchain refers to the digital ledger technology that underpins the Bitcoin digital currency. Its purpose and single use case is to provide a decentralized mechanism to ensure a token is spent just once per transaction, thereby preventing double spending of the currency. SLTs refer to next-generation ledger technologies that evolved from blockchain. SLTs are digital ledgers that can be designed to execute a range of actions, from compiling trade manifests and tracing supply chains to automating contract terms

using decentralized mechanisms inspired by first-generation blockchain. Blockchain and SLT remain difficult to understand on a conceptual level for many organizations and are still viewed in the mainstream as mostly appropriate for cryptocurrencies such as Bitcoin and Ethereum rather than broader enterprise applications. While there is the potential for enterprise application of blockchain and SLTs, the lack of standards and successful case studies make it too risky for most organizations to feel comfortable investing in these technologies at this time.

Over the next three to five years, as industry and academic consortia such as Hyperledger coalesce around mature open-source platforms and vertical use cases grow in number and maturity, Constellation expects SLTs to evolve into a critical element of enterprise IT. As the technology matures, efficiencies resulting from improvements in trust and the reduction of duplicates should outweigh most of the costs.

Early adopters may seek to identify use cases for SLTs beyond monetary uses, such as record-keeping, supply chain provenance, commerce networks, land titles, electronic medical records and academic transcripts. Expect some chaos in the next 12 to 18 months as new players emerge and consortia decide upon common standards.

SLT standards will evolve to fit the needs of each industry in which SLT is deployed; thus, early adopters should seek to build industry-centric coalitions to accelerate adoption. This presents an opportunity to pool R&D resources, spreading out both the costs and risks.

Appetite for Big Data and Cloud Grow to Support Digital Transformation

As companies pursue digital transformation, investment in big data and cloud technology becomes a priority. Seventy-five percent of respondents say their organization was increasing investment in big data technologies. A full 77 percent of respondents say their organizations would increase investment in software-as-service or cloud technology over the next 12 months, with 45 percent of that total saying the investment would be significantly greater (Figure 7).

While digital transformation is more than an IT project, it offers an opportunity to shed or consolidate aging on-premises systems, reduce capital expenditures and outsource overhead by moving to the cloud. Respondents' organizations clearly recognize this and are investing accordingly.

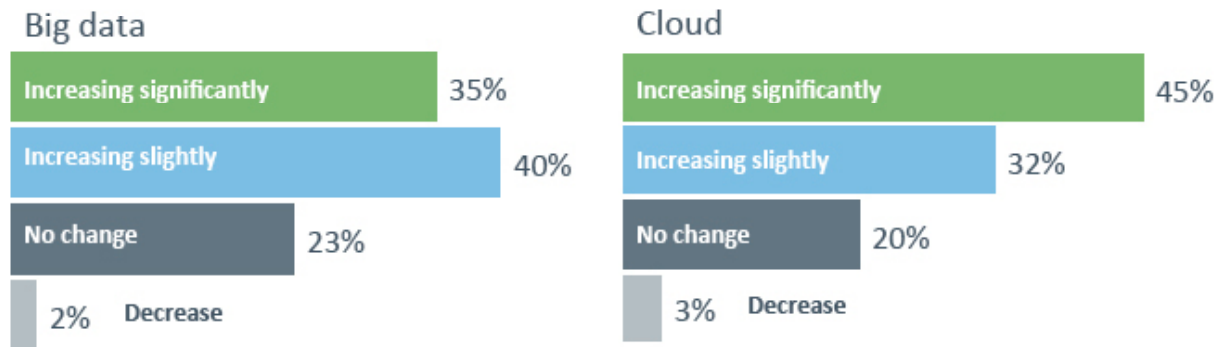
Constellation's POV

Data is the foundation of digital business, and cloud technologies are enablers of digital

Figure 7. Appetite for Big Data and Cloud Grow.

What is your company's plan for investment in big data and SaaS/cloud in the next year?

Investments in big data and cloud technology are growing to support digital transformation and emerging tech.



Source: Constellation Research

business. Constellation estimates that 87 percent of successful digital transformation projects incorporate an underlying data component. Digital business models such as “as-a-service” and “mass personalization at scale” require large amounts of data and computing power to execute. In addition, the connections for IoT are in the cloud and AI processing increasingly will rely on cloud-based services.

To ensure successful implementation of emerging technologies such as AI, IoT and SLT, organizations must achieve proficiency in cloud and big data technologies throughout the enterprise.

War for Talent Intensifies

One common concern among survey respondents is the emergence of a dearth of human talent with the skills to implement

and take advantage of digital initiatives. When asked about the role of people in digital transformation, nearly 60 percent of respondents say their workforce will be more important as digital transformation continues (Figure 8).

Constellation's POV

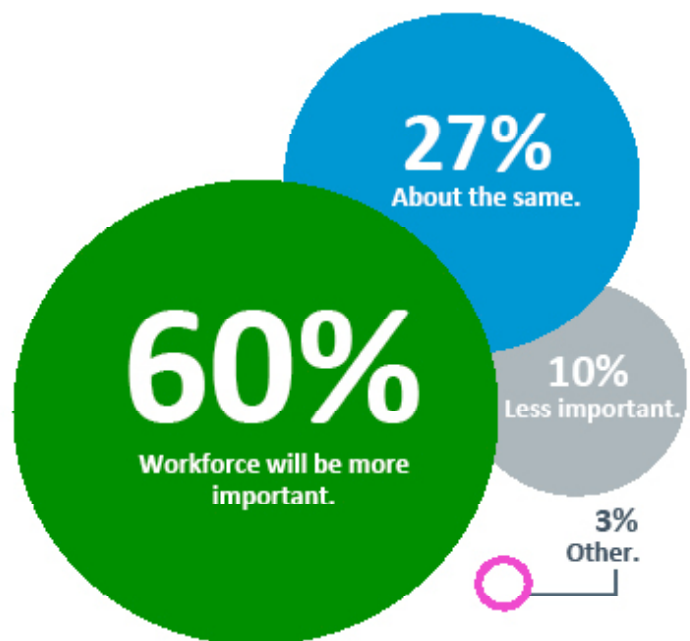
Constellation clients have expressed concern over a shortage of competent digital talent from the C-suite down, and this year's survey confirms that many organizations

have recognized that human talent will become more important, not less, as digital transformation continues. As more organizations undergo digital transformation, demand will grow for people that understand how to implement and use big data, IoT, AI and SLT. And while universities recently started to prepare the next generation of workers for entry-level and midlevel positions in digital business, many organizations will struggle to find senior executives with the skills and knowledge to lead digital initiatives. In addition, because digital transformation

Figure 8. Demand for Digital Talent Increases.

What do you expect the role of people to be in your digital transformation?

Sixty percent say their workforce will be more important as digital transformation continues.



Source: Constellation Research

often means adoption of a new business model, existing staffers may find themselves without the skills necessary to contribute to the changing business.

Expect competitors and consulting firms to aggressively poach senior talent with digital competence. Many organizations will also experience a hollowing out of the workforce if midlevel employees are ill equipped to fill roles in digital business.

Organizations can hedge against the threat of competitive recruiting while preventing a hollowing out of the midlevel workforce by cultivating a pool of digital talent within the organization. All enterprises undergoing digital transformation should implement a strategy to provide training, share best practices and inform the workforce of the digital transformation methodologies. The strategy must also seek to identify and groom leaders within an organization's existing ranks. Constellation clients report initial success with Network of Excellence and change agent models in their attempts to cultivate digital talent from within.

SUMMARY

The market is entering a new phase of digital transformation, and enterprises should prepare for the coming change. Expect heavy investment in IoT to continue. Constellation anticipates the CDO role to gain prominence in the near term but then gradually disappear as laggards complete their digital transformations. By then, the C-suite will be filled by executives who are well versed in digital business.

Expect greater adoption of technologies such as IoT, AI and SLT as these technologies mature. Organizations should apply these emerging technologies to new business models in an effort to introduce new offerings in the market. Constellation anticipates that in the next few years most organizations will move from conceptual levels of innovation in digital transformation to building proofs of concept, especially in their application of IoT and AI. Interactive prototypes will follow shortly thereafter. Don't forget: the technologies are merely a platform for the fulfillment of digital business products.

Regarding AI, early adopters should keep in mind that due to the self-improving nature, and sometimes nonlinear improvement curve, of AI technologies, fast-following competitors may quickly overtake first movers. As stated earlier in this report, Constellation anticipates a majority of enterprises will be investing in AI in 2018. Thus, expect the competition on the AI front to be aggressive and unpredictable.

Constellation anticipates wars for talent to intensify as more organizations undergo digital transformation and find themselves without sufficient talent to run AI, IoT and SLT programs. Organizations undergoing digital transformation should prioritize the cultivation of internal talent via networks of excellence, empowerment of change agents, training, and grooming of future leaders.

RECOMMENDATIONS

Taking into account the trends revealed in the 2017 Digital Transformation Survey, Constellation offers the following seven recommendations for executives pursuing digital transformation projects.

- **Answer this question. Why does your brand, enterprise or organization exist?**
What experiences and outcomes should the organization expect to deliver? Think about how to employ emerging technologies to deliver these services or outcomes more efficiently.
- **Build a digital workforce.** Everyone from the C-suite down should possess the skills and knowledge necessary to contribute to a digital business. Invest in your workforce and prioritize the cultivation of talent from within the ranks of the organization to ward off threats from talent poachers. Understand that no amount of technology will save an organization without a competent workforce.
- **Form follows function.** Recognize the goal of digital transformation is to develop a next-generation business model, and perhaps more than one. Start by conceptualizing the business model(s), and then invest in the right technology, people and processes.

- **Apply exponential technologies.**

Exponential technologies refer to a category of technology whose implementation can potentially result in extraordinary improvements in operational efficiency and innovation. Businesses should expect continuous adoption of exponential technologies to evolve to the norm. Those that approach exponential technologies too cautiously may find themselves far behind their competition. Use Constellation AstroChart™ documents to identify exponential technologies and assist with strategic planning.

- **Move from gut-driven to data-driven decisions.** As mentioned earlier in this report, Constellation views data as crucially underpinning digital business. Constellation recommends starting with a data strategy that seeks to ascertain answers to the business's most important questions. These questions should be based on what the organization needs to know, not based on the data it already possesses. As the data strategy matures, the organization should begin to utilize the insights generated by

every element of the business, thinking specifically about how to collect data from different sources and how to package data sets creatively. Finally, the organization should decide how to monetize the data and how to create new business models that use it.

- **Democratize access to data.** Constellation anticipates that 60 percent of critical data will be accessed, not owned. As IoT, AI and more devices are used, expect the volume of this data to grow. Organizations and their partners will find themselves sitting on a growing trove of data, to which they must democratize access in order to extract value from it.
- Healthy partner ecosystems are crucial to digital transformation. They will help your organization orchestrate content (products, services, experience and outcomes) in conjunction with technology platforms. The goal is to align with partners who can co-innovate and co-create these capabilities. In certain cases, the best partners will be your competitors.

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Chris Kanaracus is managing editor of Constellation Insights, where he manages Constellation's primary research program. As managing editor of Insights, Kanaracus delivers actionable analysis of breaking enterprise technology news to Constellation Executive Network members.

Prior to joining Constellation, Kanaracus spent seven years covering the enterprise software industry for IDG News Service, where he frequently broke exclusive stories with a focus on end-customer issues. A long-time industry observer, Kanaracus has held various managerial and reporting roles at newspapers in New England since 1998.

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As director of research development Courtney works closely with Constellation analysts to develop research hypotheses, produce research reports and set Constellation's research agenda.

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A background in emerging business and technology trends, enterprise apps strategy, technology selection and contract negotiations enables Wang to provide clients and readers with the bridge between business leadership and technology adoption. Wang has been recognized by the prestigious Institute of Industry Analyst Relations (IIAR) as the Analyst of the Year, and in 2009, he was recognized as one of the most important analysts for Enterprise, SMB, and Software. In 2010, Wang was recognized on the ARInsights Power 100 List of Industry Analysts and named one of the top Influential leaders in the CRM Magazine 100 Market Awards. Wang graduated from the Johns Hopkins University with a B.A. in natural sciences and public health. His graduate training includes a master's degree from the Johns Hopkins University in health policy and management and health finance and management.

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ABOUT CONSTELLATION RESEARCH

Constellation Research is an award-winning, Silicon Valley-based research and advisory firm that helps organizations navigate the challenges of digital disruption through business models transformation and the judicious application of disruptive technologies. Unlike the legacy analyst firms, Constellation Research is disrupting how research is accessed, what topics are covered and how clients can partner with a research firm to achieve success. Over 350 clients have joined from an ecosystem of buyers, partners, solution providers, C-suite, boards of directors and vendor clients. Our mission is to identify, validate and share insights with our clients.

Organizational Highlights

- Named Institute of Industry Analyst Relations (IIAR) New Analyst Firm of the Year in 2011 and #1 Independent Analyst Firm for 2014 and 2015.
- Experienced research team with an average of 25 years of practitioner, management and industry experience.
- Organizers of the Constellation Connected Enterprise – an innovation summit and best practices knowledge-sharing retreat for business leaders.
- Founders of Constellation Executive Network, a membership organization for digital leaders seeking to learn from market leaders and fast followers.



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