

→ **The Impact of Digital Transformation:
From Developers to the Data Center**

In this essential guide:

Digital transformation introduces cutting-edge technology like robotics, AI, and automation into your business and IT operations. But while the organization stands to gain from the helping hand of automation, many IT professionals remain uncertain what impact – good or bad – this new breed of tech will have on their roles.

In this guide, learn what the future of digital transformation has in store for your IT team members, from developers to the datacenter, and how their roles will change under the growing influence of AI and automation technology trends.

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Digital transformation process includes the network

Digital transformation hinges on information governance policies

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John Moore, Site Editor

When technology becomes ubiquitous, how does the IT department remain vital? It's an important question to ask because cutting-edge technologies -- from robotics to artificial intelligence -- are making it possible for almost anyone to do tasks that used to be reserved for those with technical training. The rise of these so-called citizen technologists is going to force sweeping changes in how IT departments function, and in IT automation trends.

The changes have already begun. Interviews with CIOs, industry analysts, futurists and IT recruitment firms already paint a picture of a smaller and more heavily automated IT shop. Manual tasks are disappearing, while other skills, such as business process re-engineering, are re-emerging.

In fact, Susan Tan, a research vice president at Gartner, cited a 2016 Gartner survey in which 80% of the CIOs and IT leaders polled predicted that the skills and knowledge their organizations will need in 10 years will have little resemblance to what they have on hand today.

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This rapidly evolving environment challenges CIOs to create more flexible, fluid IT departments able to absorb waves of IT automation trends, deal with new workforce requirements and meet overarching business objectives.

"The IT staff needs to know how to execute new technologies, support previous technologies and always look to the value for the business," said Ted Ross, CIO for the City of Los Angeles.

Tomorrow's software development today

Automation's momentum is already disrupting the testing profession and creating demand for new skill sets.

While demand for manual testers may decline, Diane Hagglund, principal researcher for Dimensional Research, a market research firm based in Sunnyvale, Calif., suggested the need for test automation engineers is on the rise. Test automation engineers not only need coding skills, but also soft skills and a strong understanding of the user experience, all new attributes not seen in previous IT automation trends.

More changes will come from the rise of no-code platforms. They are a key tool for citizen technologists, but they're a challenge for IT departments that need to keep a handle on the shadow IT problem.

Jason Bloomberg, president at Intellyx, an industry analysis and advisory firm focused on agile digital transformation, said he sees the IT department becoming more of a service

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provider and facilitator, providing resources that citizen developers can "mix and match within the constraints of security and compliance." He sees the separation between IT and the citizen technologist breaking down.

"Everyone is in IT in the digital workplace," he said. "Over time, there will be less of a distinction between the role of a traditional IT person and the citizen developer or citizen integrator."

And when it comes to other IT automation trends, like low-code platforms -- often aimed at professional developers -- Bloomberg goes further.

"Over time, as these platforms mature, the real question is 'Why do we need professional developers in the enterprise at all,'" Bloomberg said. "An enterprise developer is becoming more of a low-code role, where the coding part of it is less and less."

Drama in the data center

Data center automation has been around for years, but more sophisticated forms now entering IT departments have the potential to liberate or potentially displace employees.

Robotic process automation (RPA) is perhaps the most-discussed example of a technology that stands to significantly reshape the IT operations model. But RPA is part of a broader spectrum of automation that ranges from simple scripts and macros to still-emerging cognitive platforms that merge automation and artificial intelligence.

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With respect to those different skills, automation could spark a revival of a 1990s throwback: business process re-engineering. This re-engineering redux could lead to increased demand among CIOs for IT personnel who are able to rethink and redesign processes.

The economics of automation technologies such as RPA have yet to be fully felt, but the effect on the IT operations model may become apparent fairly soon.

"I think you are seeing [RPA] in IT departments now, but in many IT departments, it is still in its very early stages," said David Schatsky, managing director of Deloitte.

He added that the big impact will unfold over the next 12 to 18 months or so. At that point, IT automation trends will force organizations to face a choice: cut workers, or retain them for a transition to higher level jobs.

Some IT departments may indeed prepare workers to take on new IT roles once they are freed of lower level chores. Another possibility is reskilling IT personnel for opportunities in and around the RPA technology itself. CIOs and industry consultants suggest that business process re-engineering could become a hot skill in light of automation.

Once the process redesign work is done, the task then shifts to the care and feeding of software robots. Gartner's Tan envisions a future of bot farms consisting of numerous task-performing software entities, all requiring training, maintenance and upgrades.

"Someone has to become the bot boss," Tan said, noting that bots, at least for the time being, can't manage or maintain themselves.

AI is around the corner

AI may be the next technology wave to shake up the IT operations model. AI will likely play numerous roles, from providing cognitive capabilities to process robotics to enabling natural language processing chatbots.

In this environment, Tan has seen continuing demand for data scientists who can generate and validate hypotheses, create algorithms and understand aspects of AI, such as machine learning and deep learning. But people skilled in data science "are not easy to find," she conceded.

Training IT staff is one approach for overcoming the shortage of data scientists. Another is to acquire software tools that can turn business users into citizen data scientists. Business teams are beginning to use tools that automate elements of the data science process.

In any event, retooling and reskilling appear inevitable as AI makes its way into the IT department. John Reed, senior executive director at Robert Half Technology, an IT recruitment firm, said AI will likely create a shift in the way some people work and the skills they use every day.

As IT automation trends and AI continue to make inroads, CIOs will need people who can close the gap between humans and machines.

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"In an AI world, you need people ... who can work equally well with people and technology," Tan said. "CIOs need people who can bridge the gaps between the business, users and the technology."

Steve Brown, author, futurist and former chief evangelist at Intel, said businesses need to begin a dialog on how to build teams in which humans and machines participate as partners.

"Look at every business process in your organization and parse that out into which ... tasks are best done by human, algorithm or robot," Brown said.

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Jean DerGurahian, Features and E-Zine Editor

In the late 1990s, Apple was a computer company that was easily recognizable, if seen by many as a relic, with nothing new to offer. Apple's Think Different ad campaign, however, heralded Steve Jobs' return and ran until 2002, a year after the iPod was released, revolutionizing the way the industry viewed the company. It was the second time that Apple - which introduced its first personal computer, the Apple Macintosh, in 1983 with the "1984" Super Bowl commercial -- transformed the way everyone thought about technology.

In a similar vein, enterprises today are considering digital transformation and what it might do to revolutionize their businesses. While every company's digital transformation process might not reach the same level as Apple's Think Different campaign, IT professionals say transformation is no less critical for enterprises that want to add value and grow business.

Even as companies embark on this transition, the journey isn't necessarily a smooth one. An estimated 75% of companies are either engaged in or are developing a digital transformation strategy, according to a 2017 report from Nemertes Research in Mokena, Ill. In addition, market research company Ovum, a part of Informa PLC in London, found that among enterprises that say they're pursuing digital transformation, only 8% consider themselves successful.

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For enterprise networking, digital transformation is the process of applying technologies that improve the IT experience to drive business value. The idea of a digital transformation process isn't new. By definition, transformation reflects constant change management. But as organizations rely on more technology to support their business, digital transformation means more pressure on the network to support the technology -- and on network managers who must learn new skills and adapt new ways to interact with the business.

An enterprise can't go through a transformation without involving the network. And, sometimes, it means even changing the way the network is used, according to John Burke, CIO and principal research analyst for Nemertes.

For example, initiatives like agile branching to manage software updates require network automation and zero-touch provisioning, Burke said. In addition, internet-of-things applications come with a shift in traffic flows and patterns. Better security processes have to be in place to monitor application data that flows from the internet to the data center, as well. "The network is central to everything," he said.

Other network analysts agree. Rethinking how the network should work is a key element to digital transformation, according to Mike Gualtieri, a vice president with Forrester Research. Companies are looking for ways to meet customer demand by creating "real-time, hyperpersonalized customer experiences." To reach a state where the business is engaged in real time with customers, the network requires more consistent latency, he said. "Network availability is a necessity."

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For Revation Systems, digital transformation means delivering digital communications services over secure networks, according to Perry Price, president and CEO at the Bloomington, Minn., company. For Revation's customers, being able to take a more comprehensive look at the whole enterprise by understanding traffic behavior is how they will be transformative, he added.

The company offers unified communications and collaboration services to government agencies, banking organizations and hospital systems. Revation extends digital transformation to its customers through tools like chat, email, desktop and screen sharing, and video conferencing over its cloud platform using routing software from 128 Technology. The vendor provides a secure application that manages "sessions," or groups of data from each interaction with the software.

Revation's customers are in various stages of the digital transformation process. For example, banks and financial organizations have shared information across interoperable platforms for several years, while healthcare providers still struggle with proprietary electronic health records systems that don't easily allow users to extract data. However, healthcare is ahead when it comes to collaborative applications: Doctors can communicate with patients over video chat, while banks and their customers typically do not, Price said.

Understanding their traffic increasingly is becoming key for Revation's customers, Price has found, which are all in heavily regulated industries that require a strict attention to security. "We want to know what every packet is doing, beyond IP routing," Price said. "We need to know how that data entered the network and why."

Understanding the basics of digital transformation and change management

Companies that are managing data in real time and using that information to make changes across the enterprise have reached a high stage of transformation, according to Nemertes Research.

But first, to start digital transformation change management, companies must make sure they have the basics in place, said Robin Gareiss, president and founder of Nemertes.

Digital transformation conjures thoughts of cutting-edge technologies -- IoT device platforms, bots using artificial intelligence to respond to network issues in real time and human-to-machine interfaces. But before any of the fun stuff can be implemented, the enterprise has to create a solid foundation on which to grow. "The advanced applications come later, when the baseline is finished," she said.

Nemertes has developed a benchmark outlining best practices for technologies and strategies that form the digital transformation process. According to its research, companies that have prioritized integrating baseline technologies such as security, cloud platforms and collaboration applications will have more success with their digital transformation plan.

It's not a simple process. Overall, companies working through a digital transformation spent one or two years focused on the baseline before implementing advanced and emerging technologies, Gareiss said.

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Before the technologies can be implemented, companies have to set firm goals, she added. Growing revenue and reducing costs were among the most common goals Nemertes found in its research. Companies undergoing a digital transformation process also wanted to improve the customer experience and gain a competitive edge.

Between eight and 20 employees will typically make up a digital transformation project team, according to Nemertes' research. That staff includes executive leadership, IT and security managers, and business stakeholders working on strategy, budget, use cases and implementation. "You have to get the right people and the right number of people" in the room, Gareiss said.

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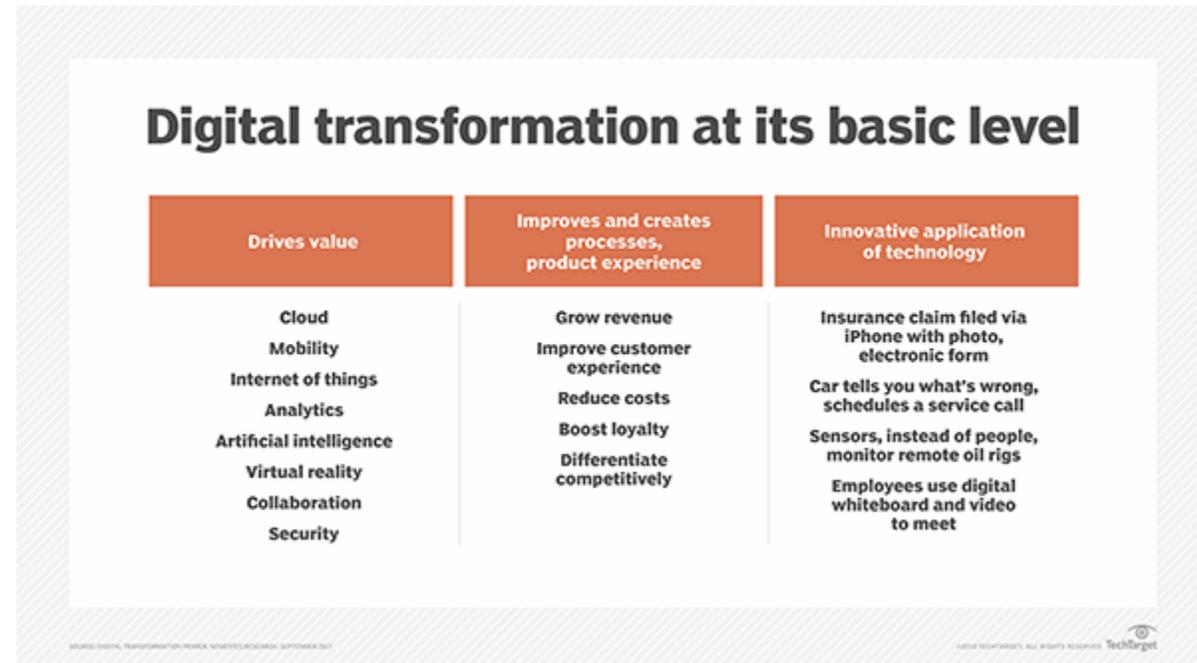
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Using data to navigate transformation

Enterprises can get tripped up in thinking that technology is the only crucial element of a digital transformation. That's not the case, according to Anna Wiącek, a director at Deloitte.

"It's not just about the tools and technology," she said. Digital transformation requires "a change in strategic thinking." Deloitte has been helping its customers with their own digital transformation using a combination of its consulting expertise and analytics tools.

For an organization to be transformative, it has to look at what both internal and external customers need and expect, Wiącek said. Analytics is at the heart of understanding those needs, she added.

The consulting firm uses Moogsoft's artificial intelligence for IT operations platform, which uses machine learning algorithms to reduce alerts, correlate events into situations and automate workflow to provide actionable information more quickly to network managers.

In addition to using analytics to understand customers, the AI platform has helped them improve their response times to diagnosing and solving system problems, and it's led to a reduction in IT problems reported by users, Wiącek said.

Digital transformation means network managers must learn new skills and adapt new ways to interact with the business.

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Network manager transformation

More than just machines, the digital transformation process includes a cultural shift. Network managers will have to study their own behaviors and skills when it comes to digital transformation, as well.

Going forward, network managers will need new technical skills, Nemertes' Burke said. They will have to develop "a comfort with centrally defined policy and scripting and programming skills for software-defined networks."

Equally important, network managers will have to develop new interpersonal skills. Network professionals should "focus on having business-level conversations with business-line users and be able to translate that into action and technology on the network," Burke said.

Digital transformation heralds a new way for companies to do business and interact with customers. Harnessing the power of the network -- through the reliable delivery of secure applications and innovative technologies -- will help companies make the transition with as few bumps as possible.

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Laurence Hart, Director

Digital transformation has been a hot topic for years now. For most of that, the traditional information governance expert had been left sitting on the sidelines after trying, and most often failing, to become involved. This is in part because information governance is viewed as a source of additional rules and requirements that slow down any transformation efforts.

The reality is that involving information governance experts early on can accelerate digital transformation efforts. The trick to becoming involved is to not lead with the end-goals of information governance policies but to offer up the governance tools that can make any digital transformation plan successful.

Remember the goal

While many organizations debate the definition of information governance, the core principle is gaining control over an organization's information assets. The problem is that the word "control" scares a lot of people. They equate control with loss of freedom. Unfortunately, this is directly due to the all-or-nothing approach that many information governance professionals have taken over the years.

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When information governance policies are executed correctly, control means simply knowing where information lives, who has access to it, and how it is used. Information governance is not about locking content into virtual file cabinets. It is about making sure that the right people can access information at the right time and have confidence that the information is trustworthy.

This is also one of the key goals of digital transformation efforts. We live in a digital world that is driven by information. This information is created in one place and moves through different processes, leaving remnants behind. Digital transformation plans create streamlined ways of getting things done where the information needed is always available.

To do that, you need to know where that information lives and how to access it. More importantly, you must have full confidence that the information is correct and not outdated or incomplete. This is a prerequisite for a successful transformation project and it is at the core of how information governance policies achieve success.

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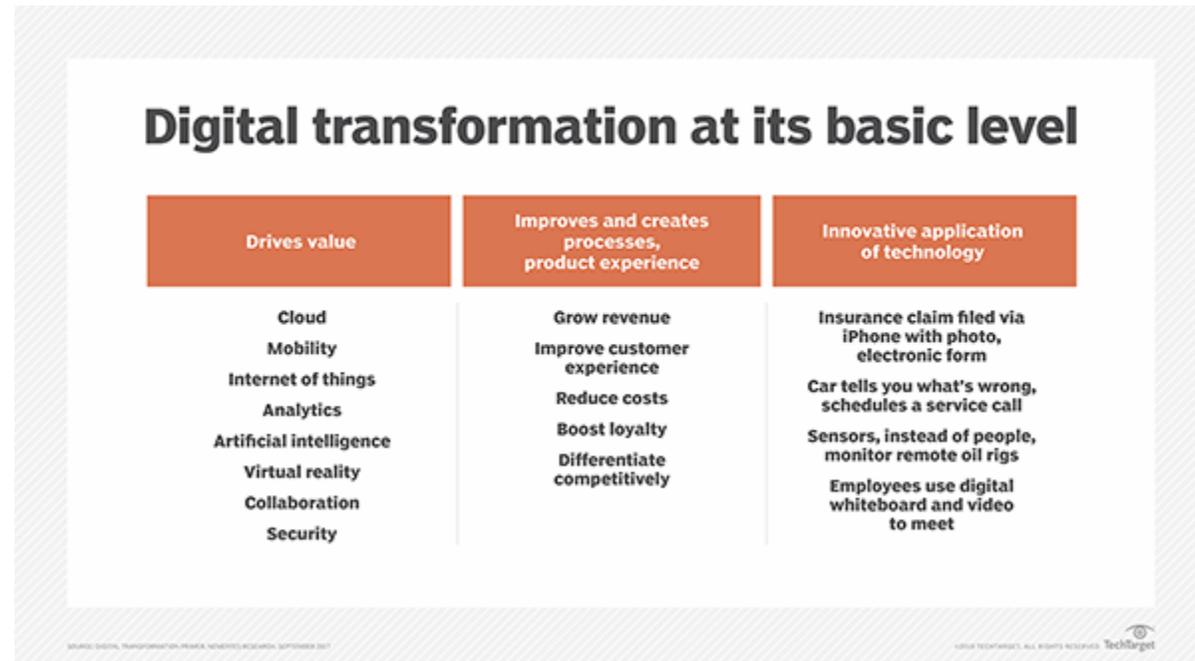
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Map the information flow

Most information professionals have been mapping information for years. Even with paper records, the progress of a case file through the organization from creation to its final resting place in records was well documented.

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Need the latest address for a customer? That was collected on Form 11A. Today it resides in the CRM. Information became digital, but the mapping skills remained the same. The destinations and linkages have simply evolved.

In the paper world, processes were linear. When electronic workflow was introduced, we improved the routing and processing capacity, but we didn't always deviate from a linear path. Eventually, people realized that digital information can go to multiple places, creating parallel work streams on the same information. Still, information stayed within its own system unless it was copied, emailed or printed.

With today's technology, information in one system can readily be accessed in every other system simultaneously. Instead of mapping the flow of information through a process, information professionals can identify the sources of data, which processes access the information and what actions create changes to the information.

Speeding up digital transformation

Every digital transformation team needs people who know the data. The team needs to know where it is, what can be done to it and how to get to it. These are the questions that a good information governance expert can provide. They have either already determined the answer or know exactly who to ask.

More importantly, information is going to move from the point of creation to the systems of records, and accessed for delivery along the way. Knowing how all of that happens is critical for information governance professionals to do their jobs.

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What the traditional information governance professional needs to keep in mind is that the hard-core records management requirements need to wait. Information needs to be captured and classified so that it can be used effectively. Restricting updates of data to reliable sources versus allowing all systems to change it are basic rules that can be implemented. With that in place, formal records management can readily be added later.

Once people are working in their digital environment and you actually have complete and accurate records, it's time to plan for long-term management. You cannot manage what you don't have, and you don't want to enshrine bad information. A digital transformation allows companies to collect process and validate information across the organization, and adding to the long-term business policies is much more straightforward. This is also more important for companies that must comply with the E.U.'s General Data Protection Regulation (GDPR) in effect May 25, 2018.

Plan around live records

The biggest change is going from focusing on the long-term management of information to making sure that information is available on demand. There needs to be protections from improper updates, but there should be a focus on enabling access to information. Adding any is the fastest way to being shut out of the entire transformation effort.

Digital transformation provides opportunities to implement information governance policies to use and govern information better, while ensuring GDPR compliance. Achieving

transformation and governance goals in the same effort is an opportunity that should not be missed.

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