Embrace The New Cloud Paradigm to Fuel Digital Transformation

With Data Management powered by Solix Common Data Platform

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The Future of Business is Digital

Digital transformation is the future of business, and data is the heart of digital. Executives are realizing that digital technology can turbocharge business performance and disrupt markets. First-movers can achieve major competitive advantage, leaving the laggards struggling to survive. More than 70 percent of organizations are expected to roll out digital transformational strategies by 2020. Some leaders already have.

Corporate desire to use massive volumes of data generated as part of digital transformation to deliver exceptional customer experiences, eliminate inefficiencies, and drive higher revenue is at an all-time high. Big data technologies like Hadoop, machine learning, and natural language interfaces are revolutionizing data use, making digital transformation meaningful and its impact felt even at the last mile.

Six ways digital transformation drives value for enterprises

- Accelerate speed to market
- Strengthen competitive positioning
- Boost revenue growth
- Raise employee productivity
- Expand ability to acquire, engage and retain customers
- Eliminate inefficiencies and reduce costs

Six ways digital transformation drives value for enterprises

that digital transformation is less about the technologies and more about the impact they have on processes, productivity, customer experiences, and the realization of competitive opportunities.

Digital is transforming the role of IT from cost controller to strategic enabler and innovator. That is making digital the top priority for enterprise CIOs. In companies leading the digital revolution, IT teams are considered partners to business in enabling desired outcomes. It is worth noting

Businesses are approaching digital technology with the clearly defined objective of becoming data-driven. But they need a modern way to manage the volume, variety, and velocity of the new data and the high compute resources needed to process it.
Challenges on the way

Unmanaged data growth can turn digital transformation opportunity into a crisis

Digital transformation is driving up data volumes at a never seen pace. To put that into perspective, 90 percent of the data in the world today has been created in the last two years alone. This isn’t going to slow down. Digitization of every process, the introduction and rapid proliferation of end-user devices, sensors, and technologies across the board are adding to the rapid growth in data generation.

However, as data volumes explode, unless the organization is well prepared it begins to drown in data, driving up storage and maintenance costs, diminishing application performance and availability, and creating data access, data privacy and regulatory compliance challenges. Deleting data to manage data growth often is not a choice as business, legal, and compliance objectives increasingly demand for real-time access to all information for longer durations. When these demands are not managed well, they can cause failure of Data Transformation initiatives.

Legacy applications can be roadblocks to progress

As technology becomes obsolete, and organizations grow, merge or consolidate operations, a number of enterprise applications end up outliving their usefulness. Some of the older applications which still are part of essential processes are unfit to be repurposed or modernized due to their monolithic build preventing adoption of modern applications. As organizations embark on digital transformation, the non-critical legacy

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This growth in data is fueled by the change in the definition of enterprise data. While structured data in ERP and CRM systems continue to be vital, the rise of unstructured data is notable. Today it is estimated that 80 percent of “enterprise data” now includes unstructured data such as documents, text, csv, audio, video, online click streams, social media posts, and IoT log files.

The result of this data growth is that every organization today is data rich. It augurs well for the success of the mission as data is at the core of digital revolution and is a key ingredient in the success of digital transformation.

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FIGURE 2  Data Growth is Accelerating

![Data Growth is Accelerating](source)

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applications continue to lockup valuable infrastructure resources and software licenses. Inability of legacy applications to integrate with modern interfaces add up to the challenge of IT managers who are trying to create a cohesive application landscape in their organizations. While these legacy applications provide minimal business value, backing up the applications to an offline storage is not an option as organizations need to retain active access to the retired data either for regulatory, legal or business requirements.

**Conflicting demands of modern data access and compliance**

Data collected for one purpose is often applied to multiple business applications. For instance, the record of clicks a customer makes while shopping online can influence financial planning, product design, and the allocation of IT resources. Hiring trends can yield information about skills, geography, and the design of compensation. Customer feedback, combined with CRM and historic transaction data, can provide insights into product strategy. Weather data combined with point-of-sale records can influence inventory and demand forecasting.

We live in a universe of continuous potential. Every time we stretch the boundaries, we find there’s more - complex problems and bigger opportunities to pursue. For organizations to realize their potential, data needs to flow seamlessly across applications and departments, allowing employees, partners, and customers to create new economic value from existing data, creating new insights for the enterprise. This requires providing self-serve real-time data access to employees across the organization that they can leverage to make better business decisions every day. Collaboration around data and data democratization are essential for the success of digital transformation initiatives.

However, this data often contains sensitive financial and customer information. Enabling a collaborative data environment without mature data governance and access policies could result in internal and external data hacks and misuse of data. This could expose the organizations to a range of risks associated with regulatory non-compliance.

While modern practices need unbounded access to data, stringent regulations require organizations to protect data from unauthorized access and processing. Regulations require that all data and data consumers not be treated alike. Policies need to change based on the type of data and the role of the data consumer. This creates a unique challenge for IT, business, and compliance professionals caught between enabling data collaboration and meeting corporate information and regulatory compliance policies.

**Meeting the needs of modern digital initiatives**

Enterprises wish to harness all of their data in real-time to deliver exceptional customer experiences, eliminate inefficiencies, and drive higher revenue. Modern technologies like Hadoop stack and ML/AI are making this possible. However, enterprises must make all of their data available through easy access and for longer duration. To process this data, high compute infrastructure must be made available on an ad-hoc burst basis. Meeting these demands through the traditional IT model results in huge capex and underutilization of resources.

Another reality that organizations need to come to terms with is the proliferation of hybrid and multi-cloud scenarios. With high adoption of SaaS application, in-house hybrid systems and new software written on IaaS systems, the new hybrid reality will only grow, driven by economic necessity. The traditional capex-based IT model is becoming prohibitively expensive anchor that will always lag far behind the needs of business. IT needs a more agile opex model to meet the unpredictable demands of modern data-driven organizations.
The Future Lies in the Cloud

In its first decade, cloud primarily disrupted IT – changing the expectations of business leaders, introducing a new economic model, and redefining what is possible. In its second decade, cloud disruption is moving beyond IT to disrupt business. Revenue growth and competitiveness are increasingly tied to the adoption of digital business principles, which rely on the dynamic and innovative foundation established by cloud computing. Cloud-based digital business is disrupting markets and industries. It is making the AI, machine learning, cognitive computing, and IoT promise a reality for organizations of all sizes.

No, it is not about cost savings

Cloud services are often seen as a money saving strategy due to their low cost, start-small-grow-big as needed offerings. The real benefit, however, is the huge increase in agility from several factors.

First, most cloud services are provided and priced according to immediate need – compute and, data volumes, etc. – with capacities modified in real time to meet changing needs. Second, the services can be provided immediately and in most cases anywhere the customer needs them, worldwide. Third, it shifts the IT model from a capex to an opex model with pay-as-you-go, giving IT greater flexibility to meet the unpredictable compute needs. Fourth, the infrastructure is constantly modernized, and innovative technologies are made available as on a services model, enabling organizations to leverage cutting-edge technologies without the hassle of deploying and managing them. Fifth, the infrastructure is available on demand across geographies making it easier for IT to manage global deployments and meeting the new data storage and processing requirements with greater ease.

The result is increased business agility and innovation, broader geographic distribution, increased reliability and availability, essentially infinite scalability, and in many cases, yes, cost

### FIGURE 3 Justifications of Public Cloud

<table>
<thead>
<tr>
<th>Justifications of Public Cloud</th>
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<tbody>
<tr>
<td>Data Center Eviction</td>
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<tr>
<td>Cost Savings</td>
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<tr>
<td>Scalability</td>
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<tr>
<td>Increased Reliability/Availability</td>
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<tr>
<td>Broader Geographic Distribution</td>
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<tr>
<td>Increased Business Agility</td>
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Source: Solix
Financially, it shifts IT from a capex to an opex model, and it eliminates the need to plan today’s infrastructure purchases based on projections of five-year demand growth. But the largest benefit is that it turns IT into a business service with a business value that business executives can understand and appreciate. As a result, companies are adopting a ‘cloud first’ strategy for all their new digital initiatives. And not just for new applications: Organizations are looking to move existing business applications to the cloud, either by migrating existing software to IaaS vendors such as AWS and Microsoft Azure, or by replacing them with SaaS services that can be tailored to provide exactly the services the company needs. Major vendors such as IBM, Oracle Corp., and Microsoft are migrating their customers wholesale to their clouds. This again ties back to the need to remove roadblocks such as data volume and legacy applications in your current on-prem environments.

**The many flavors of cloud adoption**
Cloud computing can be leveraged in several ways. Cloud services range from lower-level infrastructure (IaaS) to high-level business processes (SaaS), and from public (shared) to private (dedicated) implementations. Corporate strategies range from migrating existing applications and writing new ones to IaaS platforms to replacing applications with SaaS or custom software that leverages cloud-centric distributed and parallel processing capabilities in the hyper scale public cloud. Some of these approaches demand new skills and techniques to build, deploy, manage, and maintain applications. Some require a complete re-examination of assumptions, while others leverage existing approaches.

Gartner refers to cloud computing as a global-class phenomenon because it focuses on outcomes connected around the world, rather than on technologies and internal enterprise strategy. In the global computing model of digital business, the focus is on the culture of the consumer and an externalized view of computing. Service-oriented architecture (SOA) principles apply along with global-class concepts that involve Web-oriented architecture (WOA), cloud/client models, and REST-based approaches. In addition, the inherent focus on services in cloud computing goes beyond SOA to self-service interfaces and SLAs.

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**Need for a Modern Data Platform That Embraces Cloud to Fuel Digital Transformation**

Over the next five-to-ten years, almost all traditional compute loads will migrate to cloud. Hybrid computing will be a temporary architecture in most enterprises, increasingly dominated by cloud services until very little remains in the internal data center, and IT operations will refocus on managing those cloud services. However, this journey will take a phased approach, and no single path fits every scenario. IT organizations need to support on-prem, hybrid, and multi-cloud deployments during this transition. They will need a data management framework based on the modern realities of data origins spread across on-prem and cloud environments, data variety, massive data volumes, complex governance requirements, data privacy, and universal data access. For this reason, organizations need to adopt next generation data platforms such as Solix Common Data Platform.

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**Introducing the Solix Common Data Platform – A Big Data Application Framework**

The Solix Common Data Platform (Solix CDP) is the only enterprise-ready big data management platform for modern data-driven enterprises. It uses the best open-source big data technologies to help companies better organize, manage, and process all of their structured and unstructured data for advanced analytics, compliance, infrastructure optimization, and data security. With inbuilt features such as data ingestion, data governance, metadata management, ILM, data
preparation, visualization, and APIs, Solix CDP offers enterprises the much needed framework to build data-driven digital applications and fulfill the ever growing requirements of self-serve data access and complex data regulations.

**Is 100% metadata driven**

The Solix platform is built on a strong and complete metadata framework. This is required to govern, model, and report on data successfully. Allowing data users to add custom metadata to their ingested data supports a far richer business glossary, which in turn enables a better contextual understanding of the data. Supporting automatic metadata ingestion from multiple sources enables full lineage of the data to manage compliance, validation, audit and granular security on a single pane of glass supporting all data across the enterprise, whether it is physical, logical, or virtual.
End-to-End Governance
Comprehensive information governance provided by the Solix CDP establishes the control framework necessary for proper data access control, data assessment, data discovery, data classification, data validation, retention management, legal hold, and privilege management to achieve robust ILM. Its security mechanism integrates with existing implementations such as Active Directory, LDAP, and SSO. The Solix CDP provides a true ILM continuum that addresses the complexity of governance in the big data world, while ensuring governance for core enterprise applications is not sacrificed. The Solix ILM framework manages the data within its repository and provides integrated retention management and legal-hold capabilities.

Plug-and-Play Big Data Adoption
The Solix CDP includes all the non-standard interfaces required to build and maintain the Hadoop stack. As new technologies emerge, the Solix technical team will add any new interfaces and other technology required to connect these to the stack. The current Solix CDP stack already includes support for Hive, Spark, Impala, Apache Ranger, Apache sentry, R and cloud-based database query engines such as Big Query, Redshift, and Cosmos DB. This turns big data adoption from a huge technical challenge into a plug-and-play exercise and future- proofs the stack.

Cloud Ready
Solix CDP is fully cloud ready and supports a choice of deployment options including public cloud, private cloud, and hybrid. It leverages the unique compute and object storage offerings of public cloud services such as AWS, Azure, Google, Oracle and IBM to deliver a dynamically scalable, secure, reliable and low cost data management platform to power the next generation of apps. Additionally, Solix CDP leverages the wide geographic availability of public cloud to allow global companies to store data locally enabling them to comply with local data regulations.
One Platform with Multiple Solutions to Supercharge Your Digital Journey

Enterprise Information Archiving on the cloud

Turn a Data Growth Crisis into an opportunity while keeping Compliance and Costs under control.

Archiving has emerged as an ILM best-practice for meeting data growth challenges. Typically, up to 80 percent of data in core production applications is inactive. At a time when organizations are looking to reduce costs, archiving inactive data can free resources for high-ROI driven digital transformations.

Solix Enterprise Archiving provides a unified, scalable, and compliant storage environment with application-aware ingestion, custom retention policies, e-discovery, legal hold, and data access across structured and unstructured data. It offers tiered data archiving and leverages secure cloud-based object storage to optimize storage cost, manage data growth, boost application performance, and improve availability, while preserving data access for analysis, legal, and compliance needs. Archiving also has proven to help with application migrations and modernization as it reduces the overall data that needs to be migrated to newer applications. With Solix Enterprise Archiving, IT organizations are better able to reallocate resources to digital transformation without the worry of data growth.

Benefits of Solix Enterprise Archiving on the cloud

- Single, compliant, and secure data repository
- Leverage low cost cloud storage and on-demand compute
- For Structured & unstructured data from all applications and file stores
- Manage data growth efficiently across the IT landscape
- Improve application performance by up to 50%
- Reduce infrastructure and maintenance costs
- Fulfill E-discovery and Legal hold requirements
- Policy-based data retention and deletion for compliance
- Application aware ingestion and access capabilities
- Offers Hybrid and Multi-cloud options
- Archived data is available for advanced analytics seamlessly
- Audit control and reporting for compliance assurance
Obsolete, duplicate, and unused applications are major drains on IT budgets. Gartner estimates that “on average, 10 percent of applications in un-optimized portfolios are candidates for retirement. And an additional 1/3rd can require migration or rationalization.” Retiring these apps frees staff, eliminates the need for legacy technical skills and licensing and maintenance fees, and frees servers and storage systems for more valuable use cases. It helps with SaaS adoption, cloud migration, data center consolidation, and digital business enablement.

New regulations provide additional reasons for decommissioning legacy applications and archiving their data. Gartner’s “How To Address Data Retention and Application Retirement” report warns that “by 2022, 80% of organizations affected by the General Data Protection Regulation (GDPR) that do not engage in application retirement will be fined for noncompliance.”

The issue with application retirement often is preserving data access. The Solix CDP copies the legacy data to the cloud archive, preserving the full metadata context in complete business objects. It de-duplicates the data, compresses it as much as 90%, and then stores it in an immutable format that can be viewed, searched, and discovered for legal, compliance, and analytic uses, and standard reporting.

**Benefits for Solix Application Retirement on the Cloud**

- One platform to retire all legacy applications
- For structured and unstructured data
- Leverage low cost cloud storage and on-demand compute
- Retain long term access to data
- Meet compliance objectives
- Free up valuable resources for digital initiatives
- Reduce storage, maintenance and infra costs
- Maintain seamless access to archived data for analytics
The Solix Enterprise Data Lake provides a fully governed central data repository to store all your structured and unstructured data at scale. It features advanced capabilities for data ingestion, metadata management, data governance, and universal data access. Massive volumes of data can be captured and stored ‘as-is’ on low-cost cloud object storage without having to first structure or define a schema. This helps avoid time-consuming and expensive ETL processes at during data ingestion and enables schema-on-read to support the unique needs of every analytics use case your organization might have. Additionally, the in-depth data preparation features and the inclusion of advanced open-source technologies, including Apache Spark, Impala, Jupyter and R, make it an ideal platform for machine learning and advanced predictive and prescriptive analytics. The Solix Enterprise Data Lake can be deployed on-prem or on any of the public cloud services. It can function in a hybrid and multi-cloud environment too. It leverages the unique auto-scaling capabilities and the bottomless low cost object storage offered by cloud vendors to enable on-demand compute to process large amounts of data at low costs.

The Solix Enterprise Data Lake employs an Information Lifecycle Management (ILM) framework to meet governance, risk, and compliance objectives, and ensure that best practices for data retention and classification are deployed. This helps keep the data lake relevant, compliant and manageable by ensuring data of value is retained in a secure manner and the rest archived or purged as per pre-configured ILM policies and business rules.

**Benefits for Solix Enterprise Data Lake on the Cloud**

- Single, scalable, low cost and compliant repository for all enterprise data
- 100% metadata driven for unified data experience and understanding
- Comprehensive data governance with inbuilt ILM for compliance and cost management
- Leverage low cost cloud storage and on-demand compute
- Advanced data preparation and query capabilities for making data analytics ready
- Integration with Jupyter, R and other technologies to enable advanced ML and analytics
The Solix CDP is the only platform in the market that unifies legacy and inactive data with current data to enable seamless data experience for e-discovery, data retention, and advanced analytics.

**Solix Logical Data Warehouse**

In today’s enterprises, data is spread across different applications, databases, and object stores that are located on-prem and across multiple cloud services. For organizations to really benefit from all of this data, they need to bring it together for trend analysis and advanced predictive and prescriptive analytics. This is no small task considering the technologies powering these applications and data repositories vary widely. This makes real-time direct access to enterprise data for advanced analytics a near impossible task, as business users and analysts do not have all the skills required. While it is time consuming, IT teams can help by engineering several data pipelines to copy this data into a central data lake and make it available for downstream consumption. However, the organization’s information policies or compliance frameworks could prevent copying of some data, resulting in exclusion of certain data from analysis. This directly impacts the quality and authenticity of insights generated.

Solix LDW solves these challenges through its smart central metadata repository and virtualization technology. While the central metadata repository provides a single-pane-of-glass view and understanding of all enterprise data, the virtualization technology helps query all the data while shielding the user from underlying complexities of querying from source systems - different technologies, formats, locations, protocols, etc. – to provide a common consistent method to access data.

Data virtualization is a critical part of the LDW architecture, enabling querying of data from across multiple data sources without the need to move/copy data. It can work with both traditional structured data sources, such as databases, data warehouses, etc., and less traditional data stores, such as Hadoop, NoSQL, Web Services, SaaS applications and so on, while still appearing as a single “logical” data source to the user.

With no need to reboot the organization’s enterprise architecture, the Solix LDW harnesses the current architecture to develop a new enterprise blueprint, establishing an modern cloud-based data architecture capable of evolving with the business requirements of the organization.

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**FIGURE 10 Solix Logical Data Warehouse**

![Diagram of Solix Logical Data Warehouse](Source: Solix)
Conclusion

It should come as no surprise that digital transformation is creeping up businesses’ agendas as they seek to stay ahead of the competition, steer and make better use of technology, attract talent and drive innovation. Cloud services, which effectively offer unlimited and on-demand IT resources, form the foundation for digital transformation initiatives. Unbound, at least from a technology point-of-view, from fixed infrastructure and proprietary IT, businesses using cloud are free to take more risks and are able to respond quickly to changing market conditions.

To realize the digital promise, organizations will need to leverage all the data generated in the process. After all, data makes digitization meaningful and provides the necessary insights to fuel growth. To achieve this, many organizations need a modern big data framework that can help them derive the desired insights while reducing infrastructure costs, reducing risks, and ensuring compliance and governance. The Solix CDP is the answer. It provides robust data collection, governance, and preparation tools with self-service visualization and business intelligence. It can ingest, prepare, transform, and orchestrate data from multiple sources in real time to support advanced analytics, integrated dashboards, and actionable insights. It creates a single logical data warehouse (LDW) of structured and unstructured data from all of enterprise on-prem and cloud data sources including Hadoop data lakes, EDWs and streaming data. It ensures end-to-end lineage and enables governed data sharing among peers, employees, partners, and customers. It leverages the scale and flexible nature of cloud to offer a low costs high performant data architecture. The Solix CDP is the data platform on which companies need to build their future business infrastructure.

Source: Solix
Digital Business Transformation: A CIO Perspective

The gap between aspiration and achievement is widening for enterprises attempting digital business transformation, according to the 2018 Gartner Digital Business Survey. CIOs must help the entire enterprise work together to realize its digital business ambition.

Key Findings
Gartner’s 2018 Digital Business Survey uncovered three areas where CIOs can lead. They should:

- Explain the gap between the enterprise’s ambition and reality.
- Model digital behavior for the whole organization.
- Be digital technologists and thought leaders.

Recommendations
CIOs who are building or expanding a digital business should:

- Be truth tellers. Hold a mirror up to the enterprise’s digital ambition. Work with the CEO and executive team to revisit it, and agree on a clear, common aspiration for the future as a digital business.
- Be exemplary digital business leaders. Model digital dexterity for your IT leadership team, the wider IT organization and the entire enterprise in order to evolve the workforce for the future.
- Be digital technologists and thought leaders. Investigate where the enterprise and its industry face significant risk of disruption, and continuously explore emerging technologies, digital products and digital business models that may start or exacerbate that disruption.

Survey Objective
Almost all Gartner clients around the world are asking about digital business: What is it? What should I do about it now? This survey of leaders involved in digital business, which is in its fourth year, aims to provide clients with:

- Advice on planning and investing in digital business
- Insights on how rapidly the field is developing and what they must do now to remain relevant

Data Insights
Many enterprises know the right technology and operational things to do to succeed in digital business. Enterprises struggle to do these things because they retain conventional organizations, practices and mindsets that are no longer suited for the 21st-century digital business environment. To close the gap, leaders must emerge to show people what is possible and how to behave in a digital world. CIOs can make a major contribution to digital business transformation across their enterprises by stepping up to demonstrate, amplify and guide the right behaviors. Gartner’s 2018 digital business survey highlights three such roles that CIOs should play:

- Truth tellers — Many enterprises are not prepared for the digital disruption of their industry.
- Role models — Workers won’t adopt digital-era behaviors until they see leaders like the CIO practice them.
- Digital technologists — Business leaders need to be educated about the threats and opportunities created by digital technology.

CIOs Should Explain the Gap Between the Enterprise’s Ambition and Reality
Most CIOs understand the dynamics of digital business better than their fellow executives, so CIOs should rally enterprise leaders to accelerate digital business transformation efforts. The CIO must help close the reality gap between the enterprises’ digital business ambitions — what boards and executive teams are expecting from digital business transformation — and what they have accomplished.
In Gartner’s 2018 digital business survey, we asked respondents to describe their enterprises’ goals for digital business — whether they are optimizing existing business models or transforming their enterprises by creating new platforms, ecosystems or entirely new business models. We also asked respondents what stage of digital business they have reached. We found a wide chasm between ambition and accomplishment across all industries and regions (see Figure 1).

This chasm leaves most enterprises vulnerable to digital disruption. Markets tend to digitalize slowly at first, then hit an inflection point where digitalization unfolds rapidly. Conventional organizations cannot keep up because they have not yet developed the competencies, capabilities or market credibility. A quarter of first-time buyers of renters insurance in New York chose insurtech Lemonade,1 rather than a conventional insurer, seven months after the company launched there.

Scaling is the minimum level of safety because only a digital business that shifts from experimentation to the scaling of proven practices (i.e., digital scaling) makes a material difference to the enterprise’s impact in the market. This impact is felt from customer experience and brand strength through to financial performance.

This vulnerability is even greater than most enterprises realize. In a market undergoing disruption, the old business models have a high probability of failure. For example, fintechs and other digital players are challenging established payment providers. International payments fintech Revolut has now reached the landmark threshold of 1 million customers in the U.K., about 2.4 million customers overall and 9,000 new users a day. Even a conventional business model that has been digitally optimized will not remain viable when market disruption occurs.

**FIGURE 1** Gap Between Digital Business Ambition and Results

![Figure 1: Gap Between Digital Business Ambition and Performance](image)

Base: All respondents; n = 372.
Q: Please answer the following question pertaining to your organization’s digital business actions. My organization is focused on digital business in order to...
Multiple responses allowed.
ID: 369598

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Source: Gartner (September 2018)
Nevertheless, 85% of survey respondents say that their digital ambition is to optimize their business ambition (see Figure 2). Sixty-six percent say they are also pursuing “transformation,” but based on discussions with clients about their actual digital business initiatives, we believe that the number is closer to 10%. It is common for CEOs and business leaders not to realize the difference, and hence they often view optimization efforts as transformation. For example, a core banking “transformation” may simply replace a legacy system with a new system — albeit built with contemporary technologies — but with little change to existing business processes and products. Knowing the difference is essential for strategic planning, and CIOs should make sure they lead the way.

The CIO should lead the CEO and the enterprise executive team in an exercise to consider the question of what they need to do to meet their restated ambition. They can start by asking:

- Are we attempting to optimize our current business model, products, processes and customer experience?
- Are we transforming our business, creating new digital products, or inventing and experimenting with new business models?

Many are doing both, and there is nothing wrong with that. It’s often necessary to optimize the foundations of an organization’s operations before it can evolve to something more radical. However, when there’s a complex set of parallel efforts, executives must ensure that the priorities, resources and activities are transparent, correlated and well-orchestrated.

**Recommendations**

- **Hold a mirror up to the enterprise’s digital ambition.** Work with the CEO and the executive team to revisit the ambition and vision for the future as a digital business.
Agree on a clear, common aspiration. If multiple streams of change are necessary, then recognize the complexity and effort required in the journey, and the practical reality of how long it may take to get there. If a digital business transformation would take 10 years at the current pace, executives need to invest more money and effort to speed it up — or face an increased risk of disruption.

- **Educate corporate executives, your peers and your IT leadership team about evolving business models.** CIOs must understand the gamut of possibilities, from digitizing the 20th-century linear value chain model to participating in platform models, distributed peer-to-peer models and beyond. Business leaders need to know how to design and experiment with new elements in digital business models. Help them reimagine the possibilities for the future. Doing so will transform their mindsets and the way the enterprise faces their market.

- **Revisit the enterprise’s digital business transformation roadmap.** Assess the reality of the pace and efficacy of the current roadmap against the ambition of corporate leaders. If there are gaps that will inhibit progress, revise the plan, organization and investment to ensure success. For example:
  - Ramp up the CEO’s role as the ultimate transformation champion.
  - Redesign enterprisewide transformation governance.
  - Align transformation leaders, including the CIO, CDO and CTO.
  - Adopt agile practices, cultural changes and workforce digital dexterity.

**CIOs Should Model Digital Behavior for the Whole Organization**

Scaling a digital business requires the participation of the whole enterprise. Leaders must shepherd the development of the right culture and behaviors for digital business. The rhythm and cadence of a digital business emphasizes collaboration, communication, speed, improvisation and rapid iterations. Help may already exist within the enterprise. A marketing department that works with digital agencies may already be advanced in many digital practices. In asset-heavy industries, operations teams may have more influence and sophistication with digital technologies — such as sensors and autonomous vehicles that are used to optimize production.

Similarly, the CIO and the IT organization have experience with agile practices, and can role model the right behaviors. CIOs may not yet realize it, but enterprise leaders may already expect CIOs to step up and are getting impatient.

There is a growing gap between the speed of new technology introduction and the ability to maintain and develop the skills, capabilities and competencies to use those technologies. Digital dexterity is the ability and desire for an enterprise to exploit existing and rapidly emerging technologies for better business outcomes. Ninety percent of our survey respondents say that their enterprise has a digital dexterity program. Eighty-seven percent of respondents who have a digital dexterity program, either as part of their digital strategy or not, say digital dexterity is critical or very helpful for digital business success. Ninety-four percent say that the CIO, or some other IT role, leads or shares the leadership responsibility of their digital dexterity program (see Figure 3).

Gartner clients tell us that CIOs cannot lead a successful program unless they practice digital dexterity themselves.

To build and scale digital business, enterprises need to get better at participating in or building partner ecosystems. The enterprise cannot scale a digital business on its own fast enough to keep up with a transforming market. CIOs are in a position to show their business colleagues how to do so. The survey asked respondents which types of partners they include in their ecosystem. Fifty-three percent say employees — empowering employees across the organization, rather than just inside a business unit, to create and deliver value for customers. At the same time, 46% say customers or citizens — letting customers/citizens create and deliver value for other customers/citizens These are the top choices (see Figure 4). Only about one-quarter to one-third name consumers, digital giants (like Facebook and Baidu), competitors, organizations outside their industry or startups. Yet these types of partners can contribute the most to digital business.
transformation because they can impart innovative technologies and capabilities.

When we asked respondents who use various business ecosystems — except traditional supply chain — which types of ecosystems have been successful, 28% say employee ecosystems, and 17% say customer/citizen ecosystems. Success rates for the other types of ecosystems ranged from 4% to 12%. Thus, even when enterprises use a digital business ecosystem, they often fail to achieve success.

**Recommendations**

- **Work with HR to plan a digital dexterity program to develop the workforce of the future.** Digital business blurs legacy boundaries between who “owns” technology knowledge, skills and ideas. Over half of business roles now require IT skills, and most IT roles require nontechnical skills — from understanding human behaviors to design thinking to agile teamwork.

- **Model digital dexterity for your leadership team and the wider IT organization.** Study the three elements of digital dexterity (technology, engagement and diversity). Make a point of increasing each of them — for example, by learning how to use new tools, becoming a more active participant in one or two critical discussions, and turning to new people or sources of information before you make decisions.

- **Use the IT organization as a model for expanding the partner ecosystem outside of the enterprise and its usual partners.** Look far afield to find a partner that can help you develop a breakthrough capability. Offer this experience as an example to the business of the value that an expanded ecosystem can create.
**CIOs Must Be Digital Technologists and Thought Leaders**

Most CIOs started and pursued their careers with a technology focus. They typically understand technology better than their peers. They have seen the growth of digital technology from punch cards to websites to mobility to digital giants disrupting the world’s markets. CIOs can use that deep, rich understanding to be leaders who can ensure that the enterprise succeeds at digital business transformation.

However, being the visible, influential leader for an enterprisewide transformation is not necessarily the role that CIOs envisaged for themselves nor how they have generally operated. Traditionally, the business devised its strategy and the IT-related initiatives required to deliver the strategy, and then the CIO marshalled the resources of the IT organization to supply the demand. In the

20th century, IT strategy was downstream from the business strategy and reactively looked for alignment.

Digital business rebalances this relationship. In the digital world, business strategy incorporates digital business models, platforms, ecosystems and technologies, and the business adapts to exploit opportunities or rallies to defend against disruptive threats.

Today, the CIO must be one of — if not the — thought leader for the digital business. CIOs must alert their business leader colleagues to the opportunities presented by digital technologies. In this way, the whole enterprise collaborates with the IT organization to design, iterate and deliver new ideas to market — whether as a differentiated customer experience, a new product or a new business model. CIOs should be digital business leaders first, operational managers second.
CIOs must help the enterprise defend against digital disruption. Forty-six percent of survey respondents see a significant risk that their enterprise’s revenue will suffer from technology-driven disruption (see Figure 5). A similar number also see a significant risk of disruption to the customer experience. The enterprise must anticipate disruption and act with its own digital business initiatives. CIOs can act as a strategic early-warning system for the enterprise by alerting colleagues to the risk of disruption in emerging models and technologies. Sometimes, CIOs assume everyone else at their level of authority understands the digital world as well as they do. But CIOs should check their own assumptions about the level of digital dexterity at senior levels and speak up when they see a crisis looming.

Yet CIOs must not think that they can divest their traditional responsibility of running routine IT services. The CIO remains charged with managing the enterprise’s IT infrastructure and operations, systems, and capabilities.

The survey asked respondents to rate the capabilities of the five elements of the digital business technology platform within the enterprise (see Figure 6). The levels of maturity that respondents report vary by industry and platform. Gartner’s interactions with clients lead us to believe that these responses are likely overstated, especially in less traditional IT areas such as ecosystems and the Internet of Things (IoT). Many survey respondents are not technologists and may not appreciate what proficiency in these areas requires, and the CIOs in the survey are a little more conservative in their judgments. The results reveal the need for many IT organizations to improve their capabilities in elements of the digital business technology platform. They could do this, for example, by making it easier for nontraditional partners to connect to the business ecosystem.

**FIGURE 5  Perceived Risk of Disruption to Revenue**

Perception of Revenue at Risk for Disruption

Mean = 4.2

Base: All respondents; n = 372.
Q: To what extent is your organization’s revenue at risk for disruption by new market entrants? To what extent is your organization’s operating model at risk for disruption by new market entrants?

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or by mastering the digital/physical world of the IoT. CIOs can ensure that these digital business transformation elements can progress rapidly by developing the IT workforce capabilities and resources.

**Recommendations**

- **Investigate where the enterprise and its industry face a significant risk of disruption to revenue or customer experience, and identify which technologies will most likely create this disruption (such as artificial intelligence [AI] and wearables). Use Gartner Hype Cycles to maintain a trend map for your market, industry and enterprise to keep a constant watch on opportunities and risks. Start building skills and related capabilities in these areas within the IT organization.**

- **Reprioritize the time and resources of IT platform teams** — such as business applications and data management — from supporting conventional operations to scaling digital business. Work with the business to identify priorities — for example, is an AI application more important than a business intelligence application? Be clear about what your teams will do well, what they will do “good enough,” and what they will no longer do.

- **Make the digital business technology platform a top priority for IT investments.** Study the business strategy, and focus first on building out the platform elements that are most important for that strategy. For instance, a customer-oriented business needs a strong customer-facing platform, while an enterprise that runs a matching style of platform business model needs strong ecosystem support.

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**FIGURE 6  Perceived Maturity of the Digital Business Technology Platform**

<table>
<thead>
<tr>
<th></th>
<th>Manufacturing (n = 62)</th>
<th>Government (n = 60)</th>
<th>Education (n = 60)</th>
<th>Retail (n = 62)</th>
<th>Healthcare (n = 61)</th>
<th>Financial Services (Banking and Insurance) (n = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information systems platform</td>
<td>55%</td>
<td>52%</td>
<td>58%</td>
<td>65%</td>
<td>63%</td>
<td>66%</td>
</tr>
<tr>
<td>Customer experience platform</td>
<td>58%</td>
<td>53%</td>
<td>48%</td>
<td>73%</td>
<td>49%</td>
<td>67%</td>
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<tr>
<td>Data and analytics platform</td>
<td>54%</td>
<td>53%</td>
<td>42%</td>
<td>57%</td>
<td>46%</td>
<td>67%</td>
</tr>
<tr>
<td>Ecosystems platform</td>
<td>43%</td>
<td>49%</td>
<td>37%</td>
<td>60%</td>
<td>56%</td>
<td>60%</td>
</tr>
<tr>
<td>Internet of Things platform</td>
<td>52%</td>
<td>50%</td>
<td>38%</td>
<td>54%</td>
<td>49%</td>
<td>61%</td>
</tr>
</tbody>
</table>

**Percentage of Respondents**

Base: All respondents, excluding not sure.
Q: Please rate the capability level of your organization’s digital platforms relative to the most state-of-the-art capabilities possible for each category.
ID: 368470

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Methodology

Gartner fielded 372 surveys in a research study between September and December 2017 in order to examine how businesses and institutions understand, identify and exploit new opportunities relating to digital business. Surveys were conducted on the phone and online among organizations that have digital business ambition and focus. Respondents must either make decisions about digital business in their enterprise (70%) or offer advice to the decision makers (31%).

In total, 372 surveys were distributed in the U.S. and Canada (n = 102, 27%); the U.K. (n = 90, 24%); Australia (n = 90, 24%); India (n = 55, 15%); and Singapore (n = 35, 9%). Respondents were screened for involvement in their organizations’ digital business activities.

Companies were required to have at least $250 million in annual revenue. They operate in the following industries: financial services (n = 67, 18%); government (n = 60, 16%); manufacturing (n = 62, 17%); retail (n = 62, 17%); healthcare (n = 61, 16%); and education (n = 60, 16%).

The survey was developed collaboratively by a team of Gartner analysts who focus on digital business, as well as business model innovation, strategy and innovation. The survey was tested and administered by Gartner’s Research Data and Analytics team.

Note: The results of this study are representative of the respondent base and not necessarily the market as a whole.

Evidence

We based this document on the results of the 2018 Gartner Digital Business Survey. See the Methodology section for details about the survey.


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