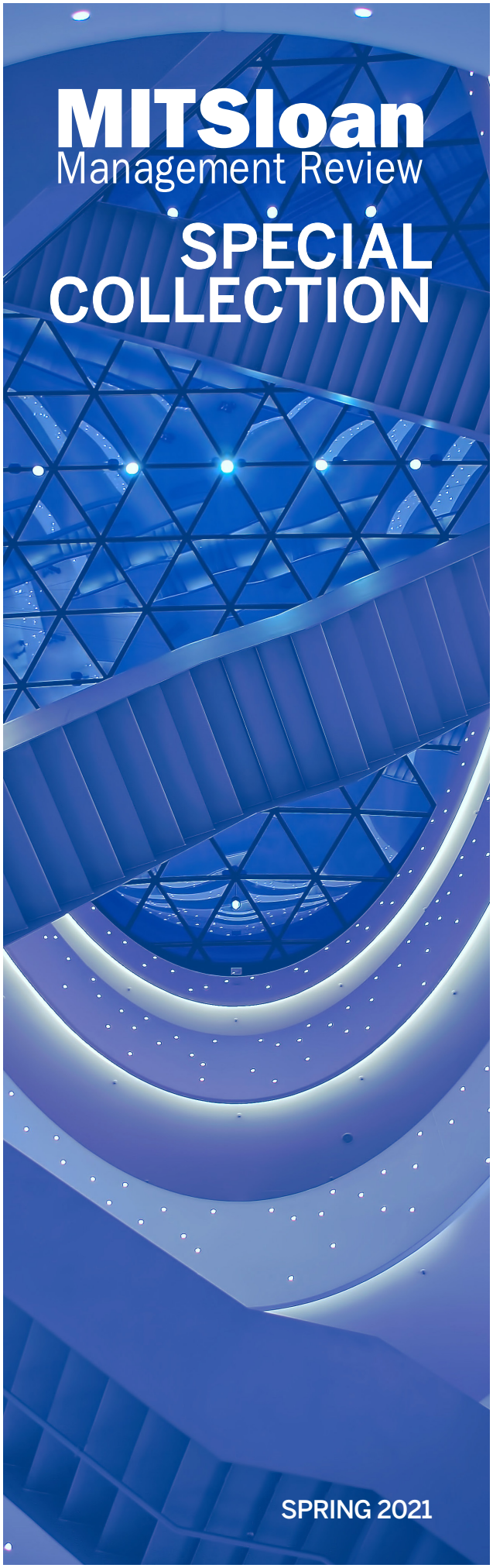


DIGITAL TRANSFORMATION

# How to Embrace Digital Transformation — First Steps

Moving toward digital transformation isn't an all-or-nothing process. There are ways to move forward incrementally.

# CONTENTS

SPECIAL COLLECTION

## How to Embrace Digital Transformation — First Steps

# The New Elements of Digital Transformation

The authors revisit their landmark research and address how the competitive advantages offered by digital technology have evolved.

**BY DIDIER BONNET AND GEORGE WESTERMAN**

MICHAEL GLENWOOD GIBBS/THEISPOT.COM

Since 2014, when our article "The Nine Elements of Digital Transformation" appeared in these pages, executive awareness of the powerful and ever-evolving ways in which digital technology can create competitive advantage has become pervasive.[1] But acting on that awareness remains a challenging prospect.

It requires that companies become what we call *digital masters*. Digital masters cultivate two capabilities: digital capability, which enables them to use innovative technologies to improve elements of the business, and leadership capability, which enables them to envision and drive organizational change in systematic and profitable ways. Together, these two capabilities allow a company to transform digital technology into business advantage.[2]

Digital mastery is more important than ever because the risks of falling behind are increasing. In 10 years of research, we have seen digital transformation grow increasingly complex, with a new wave of technological and competitive possibilities arriving before many companies mastered the first. When we began our research, most large traditional enterprises were using digital technologies to incrementally improve parts of their businesses. Since then, this first phase of activity has given way to a new one. Advances in a host of technologies, such as the internet of things, artificial intelligence, virtual and augmented reality, and 5G,

have opened new avenues for value creation. More important, leaders now recognize the need for — and the possibility of — truly transforming the fundamentals of how they do business. They understand that they have to move from disconnected technology experiments to a more systematic approach to strategy and execution.

Some companies have successfully graduated from the first phase of digital transformation and are diving into the second. But many are still floundering: In 2018, when we surveyed 1,300 executives in more than 750 global organizations, only 38% of them told us that their companies had the digital capability needed to become digital masters, and only 35% said they had the leadership capability to do so.[3] This has become more worrisome than ever: As COVID-19 accelerates the shift to digital activity, digital masters are widening the gap between their capabilities and those of their competitors.

These conditions prompted us to reexamine the elements of digital transformation that we proposed in 2014. While strong leadership capability is even more essential than ever, its core elements — vision, engagement, and governance — are not fundamentally changed, though they are informed by recent innovations. The elements of digital capability, on the other hand, have been more profoundly altered by the rapid technological advances of recent years.

Accordingly, we've revisited the elements of digital capability to reflect the opportunities and impact of new digital technologies. Some of the original elements remain relatively unchanged, some have been reconfigured, and some new elements have emerged. (See "The New Elements of Digital Capability.") The elements aimed at improving customer experience and internal operations remain important. Employee experience has expanded from a single element to its own set of elements, since employees make the business run and have firsthand insights on where processes need to improve. The elements of business model innovation have expanded, too, with the rise of multisided platform businesses and the increasing dominance of global platform players, such as Alibaba, Amazon, and Google. Last, we've given more prominence to the digital platform that underpins all the other elements in a company.

**THE ANALYSIS**

We updated our original 2014 framework to reflect changes in the state of digital transformation over the past six years.

Through interviews, teaching, and surveys with hundreds of executives, we have researched how corporations use new technologies, such as IoT and AI, to transform their operations.

Our earlier research on digital transformation identified two dimensions through which leading companies outperform their peers: digital capability and leadership capability.

We found that the elements of leadership capability have endured, but new elements of digital capability have come to the fore.

## Transforming the Customer Experience

Seeing the business from the outside in — from the customers' perspective — is as relevant and necessary today as it was in the first phase of digital transformation. But while the focus on customers has not radically changed, the elements needed to create compelling experiences have changed. Today, the three elements are experience design, customer intelligence, and emotional engagement.

**Experience design:** Customer experience has become the ultimate battleground for many companies and brands. While compelling experiences are easy to recognize, they are hard to design and deliver. That's because this work requires equal measures of empathic creativity and technological prowess. The former requires tools such as journey mapping, "a day in the life" ethnographic studies, and customer personas, as well as practices such as design thinking. These tools and practices provide an intimate understanding of human behaviors and the ability to surface customer insights through careful observation, skilled listening, and constant experimentation. The latter is powered by the ability to digitally reengineer customer experiences, by integrating front-office technologies and processes with back-office operational infrastructure to instantaneously deliver an uninterrupted service experience, for instance.

Sephora transformed long-standing customer pain points around sampling and purchasing cosmetics into a compelling, digitally powered customer experience. Using AI to match a customer's skin tones to the most appropriate products and virtual reality to sample the products, the company created a convenient, at-home shopping experience that rivals the personalization of an in-store experience. Sephora's approach, embedded in an app, attracted 8.5 million user visits between 2016 and 2018, and it has helped the company as the pandemic disrupted the in-store experience.[4]

**Customer intelligence:** Integrating customer data across silos and understanding customer behavior — efforts undertaken in the first phase of digital transformation — have become table stakes in customer experience. Now, as machine learning has begun to deliver on its initial promise, real-time customer intelligence is enabling highly personalized interactions and making it possible to deliver

## THE NEW ELEMENTS OF DIGITAL CAPABILITY

The updated framework places more emphasis on employee experience and business model innovation, as well as on the digital platform, which powers the other elements and, when structured and managed well, enables further innovation.

| BUSINESS MODEL | | |
|---|---|---|
| Digital enhancements | | |
| Information-based service extensions | | |
| Multisided platform businesses | | |
| **CUSTOMER EXPERIENCE** | **OPERATIONS** | **EMPLOYEE EXPERIENCE** |
| Experience design | Core process automation | Augmentation |
| Customer intelligence | Connected and dynamic operations | Future-readying |
| Emotional engagement | Data-driven decision-making | Flexforcing |
| **DIGITAL PLATFORM** | | |
| Core | | |
| Externally facing | | |
| Data | | |

accurately focused, proactive customer services, such as "next best offers."

Stitch Fix is an online styling service that curates personalized collections of clothes, shoes, and accessories for each of its subscribers. The curation is based initially on an extensive customer style survey and then improved and personalized through data such as returns, preferences, and a Style Shuffle feature that invites subscribers to rate clothing images each day. Some 120 data scientists support the stylists at Stitch Fix, which has grown to $1.6 billion in annual sales and $37 million net income since its founding in 2011.[5]

**Emotional engagement:** Emotional connections with customers are as essential as technology in creating compelling customer experiences. In one study, emotionally engaged customers were shown to be 52% more valuable than highly satisfied customers.[6] This is why companies are using digital technology to solicit and enable customer participation across their value chains: in R&D and product development (for example, Starbucks' MyStarbucksidea.com), content creation (LinkedIn profiles), logistics (UPS MyChoice), and services (iStockphoto inspectors).

Giffgaff, a U.K. virtual mobile operator owned by Telefonica, has a business model that is powered by its member (customer) community. With a staff of fewer than 250 people, the company has no call center and no customer service department. Essentially, customer service has been outsourced to its more than 3 million members — and it works.[7]

## Transforming Operations

As ever, well-managed operations are essential to converting revenue into profit, but now we're seeing a shift in the focus of digital transformation in this arena. Advances in sensors, cloud, machine learning, and IoT are allowing companies in every industry to transform their operational capabilities. In addition, leaders are seeing how operational excellence can move beyond back-office efficiency to enable engaging customer experience and business models that competitors cannot copy. This operational transformation is occurring in three elements of digital capability: core process automation, connected and dynamic operations, and data-driven decision-making.

**Core process automation:** Even as some companies are still implementing traditional automation approaches such as enterprise resource planning, manufacturing execution, and product life cycle management systems, other companies are moving beyond them to digitally reinvent operations. Amazon's distribution centers deliver inventory to workers rather than sending workers to collect inventory. Rio Tinto, an Australian mining company, uses autonomous trucks, trains, and drilling machinery so that it can shift workers to less dangerous tasks, leading to higher productivity and better safety.

In rethinking core process automation, advanced technologies are useful but not prerequisites. Asian Paints transformed itself from a maker of coatings in 13 regions in India to a provider of coatings, painting services, design services, and home renovations in 17 countries by first establishing a common core of digitized processes under an ERP system. This provided a foundation to build upon and a clean source of data to generate insights. Later, the company incorporated machine learning, robotics, augmented reality, and other technologies to digitally enable its expansion.[8]

**Connected and dynamic operations:** Thanks to the growing availability of cheap sensors, cloud infrastructure, and machine learning, concepts such as Industry 4.0, digital threads, and digital twins have become a reality. Digital threads connecting machines, models, and processes provide a single source of truth to manage, optimize, and enhance processes from requirements definition through maintenance. Engineers at Raytheon Technologies, for example, model machine tools at the cutting face — enabling them to design components right the first time, with desired tolerances, surface features, and defect rates. Construction companies link drone-based observations to blueprints to identify and correct problems before they require expensive rework.

The ramifications reach far beyond the manufacturing process. Schindler, a maker of elevators, escalators, and other transport systems, used to manage each of its products separately, making it difficult to understand and manage overall traffic flows in real time. But, by connecting its products and adding analytics, the company is able to optimize transportation across an entire office building or campus — anticipating when people will be moving from one location to another, changing operating speeds and routes accordingly, and responding to mechanical issues before they become outages.[9]

**Data-driven decision-making:** In recent years, the basis for operational decisions has increasingly shifted from backward-looking reports to real-time data. Now, connected devices, new machine learning algorithms, smarter experimentation, and plentiful data enable more-informed decisions. This capacity is spreading to strategic and marketing decisions, too. Digital masters are taking advantage of this by integrating operational and strategic decision-making in new and powerful ways.

Flex, a global provider of manufacturing and supply chain services, created Flex Pulse to deliver analytics-based management capabilities.[10] Pulse tracks and optimizes inventory usage and supply chain status across more than 1,000 of Flex's enterprise customers, with each customer able to see its own supply chain information via apps. When a disruption occurs or a risk emerges in one part of the world — a volcano, political turmoil, or a disease outbreak — Flex can adjust its supply chain processes in response. Pulse also provides Flex with deep data-based insight into broader geographic, industry, and supply chain trends so that it can better choose, manage, and negotiate with its sourcing partners.

## Transforming Employee Experience

If we've learned anything during the past decade of digital transformation, it's that employees can be either the greatest inhibitors or the greatest enablers of transformation success. Accordingly, companies have begun to focus on the employee experience as intently as they do on the customer experience. Three elements of employee experience transformation have emerged in recent years: augmentation, future-readying, and flexforcing.

**Augmentation:** Warnings that robots will replace humans have given way to a more nuanced and productive discussion. Now, companies are considering how robotics and other digital technologies can augment employee productivity and performance — enabling people to work faster, smarter, and more safely.

Workers in Huntington Ingalls Industries' Newport News, Virginia, shipyard use augmented reality to help build giant complex vessels such as aircraft carriers and submarines. They can "see" where to route wires or pipes or what is behind a wall before they start drilling into it. This system and others improve team performance and worker satisfaction by reducing trips to get blueprints and paperwork, managing handoffs across shifts, and showing workers how their work fits within a project as a whole.[11]

**Future-readying:** The dynamism of today's competitive environment highlights the urgency of providing employees with the skills they need to keep up with the pace of change. In the past few

years, this has given rise to new models of managing learning and development in organizations, led by a new kind of chief learning officer, whom we call the *transformer CLO*.[12] Transformer CLOs reshape corporate capabilities and culture by revamping *learning goals* to help employees develop the mindsets and capabilities needed to perform well now and adapt smoothly in the future; *learning methods* to create learning experiences that are more atomized, digitized, and personalized; and *learning departments* to make them leaner, more agile, and more strategic. By transforming the learning and development function, these leaders ensure that employees have the capabilities they need to embrace digital technology and drive business transformation.

Julie Dervin, global head of corporate learning and development at Cargill, told us, "Unintentionally, we were creating a learning culture where only a select few got access to high-quality training. … We've been fundamentally changing how we design, deliver, and shape those learning experiences to be able to reach exponentially more learners with high-impact learning."[13] The food and agriculture company is shifting its mix to incorporate more digital than in-person experiences — even for senior executives — and learners appreciate the change. It is also introducing new learning opportunities such as "application challenges" where workers receive a short lesson, apply it immediately, and then receive immediate feedback from their peers.

**Flexforcing:** To respond to fast-paced digital opportunities and threats, companies also need to build agility into their talent sourcing systems. In the past decade, outsourcing provided a partial answer to the challenge but with mixed results. Ecosystems of partners also have been used to provide talent on demand, but managing such ecosystems requires heavy investments in resources and attention. Now, we see some companies seeking talent agility in new ways.

As automation and AI applications take over tasks once performed by humans, some companies are multiskilling employees to make the organization more agile. For instance, oil and gas companies have broadened the occupational scope of their geoscientists using intensive multiskilling training in topics like geology, geophysics, reservoir engineering, and geochemistry to develop a cadre of agile specialists.[14]

**We see three kinds of business model transformation: digital enhancements, information-based service extensions, and multisided platforms.**

Other companies are using contingent workers, which may represent as much as 40% of the U.S. workforce, to supplement their talent on a variable cost basis.[15] Some of them, including UPS and Target, are building their own pools of gig workers by encouraging ex-employees and retirees to boomerang back on a contingent basis to fill important skill gaps.[16]

## Transforming Business Models

In 2014, despite much talk about business model transformation, we found that only 7% of companies were using digital initiatives to launch new businesses and only 15% were creating new business models with digital technology.[17] Times have changed. Now, executives in every industry are paying closer attention to how digital prowess can yield business model innovation. Without falling victim to the "everything is being disrupted" mantra, it is clear that the extent of business model transformation is broadening.[18] We see three elements supporting business model transformation: digital enhancements, information-based service extensions, and multisided platforms.

**Digital enhancements:** Business model transformation doesn't always require disrupting a company or industry. Increasingly, companies are finding ways to digitally enhance their existing business models without requiring major changes to the business. For instance, nearly 80% of traditional retailers in the U.K. are now meshing digital and physical channels through click-and-collect services.[19]

Others are turning product sales into service offerings. For example, Hilti, a construction tools and products provider, created a tools-on-demand program for its construction clients. Rather than selling tools, it makes a variety of tools available through a subscription service that includes repairs and customized services.[20]

**Information-based service extensions:** More and more companies are expanding their product-based business models with information-based services, combining sensors, communication networks, apps, and analytics to create value for customers and new sources of revenue for themselves. This requires advanced analytic capabilities, end-to-end service design, and tight integration with customers' devices and business processes.

Global tire maker Michelin connected its products using embedded sensors that collect and

transmit valuable data on usage, distance, and maintenance needs. Its Fleet Solutions business now provides its customers with comprehensive and convenient tire management services that deliver better cost control, fewer breakdowns, and less administrative work. Essentially, the company has moved to an outcome-based business model, selling problem-free kilometers instead of tires.[21] These as-a-service offerings are appearing in every industry and are particularly compelling for large, expensive items such as power turbines and aircraft engines.

**Multisided platforms:** Multisided platforms have disrupted a range of industries including taxi services, hospitality, and retail, and they are spreading further afield. In 2018, for instance, German steel and metal distributor Klöckner launched XOM, a proprietary online platform to distribute its products. Moreover, the company invited its competitors to join the platform. This positioned Klöckner's platform as an independent digital marketplace for anyone buying or selling steel, metal, and other industrial products. To ensure fair and transparent access to competitors, XOM is run independently of the core business.[22]

Launching a successful multisided platform ecosystem requires specific economic conditions, heavy investment, and a strong dose of luck to reach profitable scale. So not every company should try to become the platform leader for its industry. But companies that cannot create their own multisided platforms can still use platform economics to partially transform their business models or find an economically viable role to play in platforms operated by others. For example, global brands including Kenzo, Burberry, and Versace joined Luxury Pavilion, a subset of Alibaba's Tmall.com, as an entry channel into the lucrative Chinese luxury market at lower risk and cost rather than trying to build their own platform ecosystems.[23]

## Transforming the Digital Platform

The foundation for digital transformation is a clean, well-structured digital platform — the technology, applications, and data that power a company's business processes. None of the other digital elements can achieve their full promise without it.

Advances in technology and methodology in recent years have made the challenge of building a solid digital platform simultaneously easier and tougher. Cloud computing, agile development methods, external code libraries, and easy-to-use development tools enable developers to build new functions rapidly but can also lead to the proliferation of inconsistencies and complex tangles of tech spaghetti. On the other hand, Agile, GitHub, DevOps, as well as containers and microservices, make it easier to coordinate changes; innovate quickly, safely, and smartly; and avoid reinventing the wheel. The digital platform has three interrelated but distinct elements that work together to power your company.

**Many first-wave digital transformations did not include IT as a partner and failed; now, IT leaders are driving efforts in some companies.**

The first element is the *core platform*, a strong foundation for operational and transactional systems (back-office systems, systems of record, etc.) that power a company's key processes. This core platform — an organization's technology backbone — should be well structured, well managed, and only as complex as it really needs to be.

The second element is an agile *externally facing platform* that powers the websites, apps, and other processes that connect to customers and ecosystem partners. This platform is more than a pretty front end. It needs to work with the core platform to perform key transactions such as payments and serve as an attractive and agile platform for conducting customer-facing experiments and delivering personalized experiences.

The third element is a *data platform* that provides the ability to perform intense analytics, as well as build and test algorithms, without disrupting the company's operational systems. In recent years, we've seen a tremendous increase in algorithms that use unstructured data — such as text, images, and voice — to improve customer experience or internal operations, making data platforms a key component of digital innovation.

Along with these technology and architecture elements, we've seen the dawning of a hard-won recognition of the importance of the IT function in making digital transformation work. Many first-wave digital transformations did not include IT as a partner and failed as a result. Now, IT leaders are driving digital transformation in some companies. In other companies, IT and digital and business leaders are working more closely together to make the digital transformation faster, more innovative, more comprehensive, and more effective than before.

**DIGITAL TRANSFORMATION HAS** risen much higher on the corporate agenda since our article and book in 2014, and the drive to maintain operations disrupted by COVID-19 has made it an even higher priority. But even as companies have had to move quickly to adjust to the realities of a global pandemic, their leaders also need to take a longer view. They need to consider how digital technologies can be used not only to enhance their products and processes but also to reinvent their businesses. In this article, we have shared examples that can help executives identify opportunities to increase digital capability across the business. This digital capability and the leadership capability to envision and drive organizational change are the key ingredients for meeting this challenge.

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**Reprint 62210.**

# Driving Growth in Digital Ecosystems

HARRY CAMPBELL/THEISPOT.COM

Developing the right capabilities for digital partnering is key to getting value from your ecosystem strategy.

**BY INA M. SEBASTIAN, PETER WEILL, AND STEPHANIE L. WOERNER**

High-growth companies don't go it alone. Increasingly, they are achieving results by creating and orchestrating digitally connected ecosystems — coordinated networks of enterprises, devices, and customers — that create value for all of their participants.[1]

Companies whose dominant business model is ecosystem driver — in both B2B and B2C domains, such as energy management, home ownership, and financial services — experienced revenue growth approximately 27 percentage points higher than the average for their industries, and had profit margins 20 percentage points above the average for their industries, according to our research.[2] That 2019 global survey of 1,311 executives also found that successful drivers achieve outsized results by attracting the partners needed to provide complementary — and competing — products and services that make their ecosystems seamless "one-stop shopping" destinations for customers.

Complementary offerings make it easier for customers to obtain comprehensive solutions to their problems. For example, when China's largest insurer, Ping An, realized that its customers wanted not only insurance but also a means of addressing their medical and well-being needs, it created Good Doctor. The Good Doctor platform offers 24-7 one-stop health care services that are provided by pharmacies, hospitals, and about 10,000 doctors. In September 2019, Good Doctor reported serving more than 62 million customers monthly. Moreover, nearly 37% of Ping An customers used more than one of its services in 2019 — an important measure of ecosystem success.[3]

Successful ecosystem drivers also offer their customers greater choice, even when that entails featuring competing offers. In Australia, real estate platform driver Domain partners with about 35 mortgage lenders to offer homebuyers more loan choices. In the second half of 2019, the company's Consumer Solutions segment, which consists of its loans, insurance, and utilities connections businesses, grew revenue by 72%.[4]

As all of this suggests, a strong partnering capability is required to successfully grow digital ecosystems. This capability must be designed to support *digital* partnering, which is not the same as the traditional handshake and bespoke partnering of the physical world. Traditional partnering often includes exclusive relationships, long-term contracts, and deep integrations, all of which take time to establish and require strategic commitment. Digital partnering creates growth by adding more products and customers via digital connections with other companies that enable fast response to customer needs. It requires the ability to determine and agree with partners about who will create value, how revenue will be apportioned, and what data will be shared; it also requires the capacity to quickly add partners' products and services via plug-and-play connections that offer immediate order and payment processing, and sometimes delivery as well.

This ability varies widely across sectors (see "Industries Vary in Their Development of Digital Partnering Capabilities," p. 60), but in several industries in our survey, the average market share of ecosystems increased with digital partnering capabilities. In manufacturing, average market share rose from 50% to 62%. In services, it rose from 21% to 35%, and in retail, travel, and hospitality, it rose from 10% to 75%. Moreover, we found that companies with above-average reach (new customers) and range (new products and services) thanks to digital partnering enjoyed revenue growth at 9.8 percentage points above their industry average, while companies that did not partner grew at 7.7 percentage points below their industry average.[5]

To better understand digital partnering in ecosystems, we studied the practices and results of ecosystem drivers. We found that the more successful drivers attended to two principal partnering capabilities: digital readiness and curation.[6] Digital ecosystems in the top quartile on digital readiness had an average market share that was 110% higher than the average market share of the bottom quartile. Ecosystems in the top quartile on curation had an average market share that was 128% higher than the average market share of the bottom quartile.

## Digital Readiness

Partnering in digital ecosystems requires drivers and their partners to be fully prepared to create and extract value. Financial services giant Fidelity Investments began to focus on capabilities required for digital partnerships in 2017 and now offers a marketplace in its personal investments business; a wellness platform in its workplace services business; and Wealthscape Integration Xchange, a storefront in its institutional business.[7] Its experience illustrates how successful digital partnering requires digital readiness that consists of three key characteristics: being distinctive, being digitally organized, and being open.[8]

**Distinctive.** To attract partners, a digital ecosystem needs to provide differentiated value that enables it to stand out from its competitors. This value may come in various forms, such as a trusted brand, compelling offerings, low prices, or a superlative customer experience.

As a well-established incumbent, Fidelity was able to leverage its market-leading offerings, its scale, and the trust of tens of millions of existing customers to its new ecosystem. It used these differentiating factors to attract ecosystem partners that could provide additional services and unique

### THE RESEARCH

In 2017, the authors surveyed 158 enterprises, examining how partnering affects the performance of digital ecosystems at the company and ecosystem levels.

In 2018-19, they interviewed more than 70 executives responsible for digital ecosystem partnerships in diverse industries, including manufacturing, financial services, IT software and services, and health care, about their successes and challenges.

In 2019, they surveyed 1,311 enterprises, examining a variety of digital transformation topics, including business models and the role of the top management team in digital transformation.

The authors developed the concepts of curation and digital readiness based on the interviews and the coordination literature. They tested their effect on ecosystem market share and company performance through statistical analysis.

## INDUSTRIES VARY IN THEIR DEVELOPMENT OF DIGITAL PARTNERING CAPABILITIES

| INDUSTRY | LOW ON BOTH DIGITAL READINESS AND CURATION | HIGH ON EITHER DIGITAL READINESS OR CURATION | HIGH ON BOTH DIGITAL READINESS AND CURATION |
|---|---|---|---|
| **Manufacturing** | 0% | 17% | **83%** |
| **Services** | 33% | 0% | **67%** |
| **Retail, Travel, and Hospitality** | 40% | 0% | **60%** |
| **Heavy Industry** | 17% | 33% | **50%** |
| **IT, Media, and Telecom** | 43% | 18% | **29%** |
| **Financial Services** | 80% | 0% | **20%** |
| **Nonprofit and Government** | 67% | 33% | **0%** |
| **Health Care** | 100% | 0% | **0%** |

SOURCE: MIT CENTER FOR INFORMATION SYSTEMS RESEARCH ECOSYSTEM SURVEY (N=158).

value to Fidelity's customers. For example, as personal investors navigate life events, they can easily access a variety of offerings, such as student loan refinancing and mediation and legal services, through the company's digital partners. Wealth management companies can access Fidelity solutions and more than 175 third-party technologies, including customer relationship management, financial planning, and portfolio management, in the Wealthscape Integration Xchange.[9]

**Digitally organized.** Drivers and their partners need operating models that are optimized for digital ecosystems. This usually requires them to revamp processes used in traditional partnerships, such as procurement, quality control, and legal, and making them more digital and connected. High-performing drivers also eliminate internal silos, use agile methodologies, and leverage data analytics — all of which help them to design for speed and agility when working with digital partners.

At Fidelity, senior executives led cross-business teams to execute 11 fast-track initiatives to bolster its enterprise capabilities, including digital marketplaces and a strategy to API-enable enterprise core capabilities. The company is also undertaking a broad-based cultural shift to encourage partnering, agile teams, and the democratization of data.[10]

**Open.** It is easy to connect with good ecosystem drivers and partners. They are able to share their distinctive core capabilities and quickly scale digital partnerships via APIs. We found that digital connections between companies via APIs have significantly increased in the past two years. In 2017, companies shared, on average, 24% of their core capabilities externally via APIs; in 2019, the average had risen to 37% — a 54% increase.[11]

As Fidelity's brokerage business transformed from a mainframe environment to a cloud environment, the company built enterprisewide capabilities that promote openness by launching an API store and establishing companywide standards designed to make the APIs easily consumable both internally and externally. In the Wealthscape Integration Xchange storefront, for example, B2B customers can create a custom platform that includes Fidelity's core services and single sign-on, account opening, and transfer-of-assets functionality with many of the company's digital partners.[12]

## Curation

To grow through partnering, ecosystem drivers must be thoughtful curators of the products and services they offer. Curation enables drivers to coordinate effectively with their digital partners while creating and growing an ecosystem. Our study found that ecosystems with larger market shares had more open designs (that is, a broader set of companies was invited to partner, offering a wide selection of products

to customers). They also spanned multiple ecosystem domains. For instance, Amazon's ecosystem includes shopping, selling, purchasing, and operations domains, and Siemens Healthineers spans health, finance, daily life, and education domains. In China, WeChat is the go-to ecosystem for a variety of daily activities in the lives of its users.

Bayer subsidiary The Climate Corp. has grown its digital agriculture platform, FieldView, from 5 million paid subscription acres in 2015 to more than 95 million acres in 2019.[13] To do so it has curated offerings from about 65 partners, with services such as satellite imaging, soil assessment, and drone mapping, that it integrates into reports, recommendations, and planting programs that help farmers optimize their crop yields. FieldView demonstrates that good curation is composed of three key characteristics: joint goals, sharing benefits, and sharing information.[14]

**Joint goals.** The drivers of successful ecosystems establish a shared vision that serves as the foundation for value creation and governance in the ecosystem.

The Climate Corp. curates a diverse ecosystem of services such as analytics, planting prescriptions that can be downloaded to farm equipment, and crop insurance, among others, provided by partners that are complementors and competitors. The company seeks partners that share its vision: "A digital agriculture ecosystem where farmers, globally, can easily access a broad and interconnected set of tools, services, and data to optimize all of their decisions on the farm."[15] Farmers can select from multiple partner offerings on the platform and choose which partners can access their data. Climate ensures a consistent experience for farmers and provides data in one place, leveraging the ecosystem data to improve agronomic recommendations.[16]

**Sharing benefits.** Successful ecosystem drivers clarify who captures what value and develop mutually beneficial relationships with their partners. In addition to revenue, these benefits often include customer stickiness, engagement, and visibility. Many of the companies we studied experimented with digital partnering to complement their core offering by curating products of interest to their customers. These offerings were important for meeting customer expectations for more choice, according to executives we interviewed, but they also pointed out that improving customer experience has not necessarily translated into big revenue gains. Instead, it has produced higher levels of customer engagement and stickiness. Similarly, ecosystem partners can benefit from associating with a driver and gaining visibility with their customer base and within their industry.

Climate created an open ecosystem to bring more value to customers and drive innovation in the agriculture industry. The company makes it easy for partners to join the platform through APIs on its developer platform, but there is a rigorous vetting process. A shared incentive for potential partners that may compete with one another to join the FieldView platform is the opportunity for more revenue through visibility and access to Climate's global base of farmer customers. In other cases, businesses join the platform because their retail partners and farmer customers request integration.[17]

**Sharing information.** In digital ecosystems, data is a valuable currency that gives rise to potentially contentious issues, such as access to the identity of

## 3 QUESTIONS BEFORE YOU BEGIN DIGITAL PARTNERING

**1. HOW WILL YOU PREPARE YOUR COMPANY FOR DIGITAL PARTNERING?** Start by identifying the distinctive services that you can make available via APIs to digital partners so that they can complement them to create unique value propositions for your customers. Drive your digital transformation internally to maximize your ability to attract external partners.

**2. WHAT SHOULD A WELL-CURATED ECOSYSTEM OF PARTNERS LOOK LIKE?** Thoughtfully identify potential partners that have compelling complementary offerings and that share your vision for customers, pursue mutually beneficial partnerships, and engage in effective information sharing, which often involves real-time data. Develop aggregate information to help you and your partners assess success.

**3. WHO WILL BE RESPONSIBLE FOR DIGITAL PARTNERING IN YOUR ORGANIZATION?** Too often, no one is responsible for digital partnering, or it is delegated to the procurement group, where the focus tends to be on getting the best price for a product. Our statistics show that digital savviness and the involvement of the top management team is essential. The presence of CEOs and chief digital officers who are effective digital transformation drivers significantly predicts effective ecosystem participation. And other digitally savvy executives, like CFOs, chief marketing officers, and business unit heads, are particularly important for executing digital partnering and capturing value from ecosystems.

customers and their activities. Successful ecosystem drivers define who gets what information and establish guidelines for how it will be shared — both digitally and ethically.

In the FieldView ecosystem, all partners, whether a startup or major company, must agree that farmers will control their own data and choose the partners with whom they will share data. Climate recently terminated a partnership with Tillable, a farmland lease and rental management platform, over concerns that the company may have used FieldView data without the farmers' consent. In doing so, Climate emphasized data privacy and its guiding principle to make it easy and safe for farmers to share their own data with the digital partners they choose.[18]

## Digital Partnering for Competitive Advantage

None of the six characteristics of digital readiness and curation are easy to attain and sustain, which may explain much of the variation in the performance of ecosystems. Our research found that the top quartile of ecosystems won an average market share of 72%, while the bottom quartile had only a 3% average market share.

Today, at least, digital ecosystems are a winner-takes-most proposition. Effective partnering helps drive that proposition. Both drivers and participants in digital ecosystems stand to gain the most benefits by putting their digital houses in order so that their distinctive value propositions can be easily integrated with complementary offerings, and by choosing partners with shared goals in ecosystems set up to share benefits and information among participants.

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**Reprint 62127.**

# Why You — Yes, You — Need Enterprise Architecture

Jeanne Ross and Cynthia Beath

Digital technologies have raised customer expectations for responsive, seamless online services and information-enriched products. Many companies are struggling to meet those expectations and will continue to struggle unless they embrace enterprise architecture.

We define *enterprise architecture* as the holistic design of people, processes, and technology to execute digitally inspired strategic goals. Every negative customer interaction via a company app, website, telephone call, or service provider exposes your architectural inadequacies. Left unresolved, these issues will destroy formerly great organizations.

One common architectural problem: Many businesses are designed around product verticals. Those verticals optimize profits and define a customer experience for that specific product independently of the rest of the organization. The digital economy, however, rewards integrated solutions, which require that people work across product lines. To meet these demands, companies must rethink how work gets done and how that work relies on people, processes, and technology.

Although the need for radical redesign is urgent, we don't recommend that you run out and hire an enterprise architect to identify the gaps in your operations. Unless you have fewer than, say, 50 people in your business, you cannot simply redraw the organizational chart. You will need to evolve into a digital company, addressing the experience challenge without compromising product excellence and innovation. To take advantage of new technologies, you'll need to become flatter, more evidence-based, more automated, and more digitally aligned both vertically and horizontally. These design changes will allow you to respond faster to both operational problems and new business opportunities.

## Three Principles for Organizational Redesign

Enterprise architecture provides a road map for organizational redesign. This will be a long, never-ending ride, so you should get started now. Adopting three enterprise architecture principles — breaking key outcomes into components with designated accountability, empowering cross-functional teams, and allowing business design to influence strategy — will help you embark on your journey.

**Principle 1: Enterprise architecture breaks processes and products into components.** At the beginning of the current millennium, developing an enterprise architecture meant designing enterprisewide systems and processes. Enterprise

architects — often based in IT units — helped executives articulate a target state for the execution of transactions and core business processes. This is a value-adding exercise, but it is no longer enough.

Today, enterprise architecture involves componentizing a company's key outcomes — products, customer experiences, and core enterprise processes — and assigning clear accountability for each component. In other words, the enterprise architecture designs an organization's critical people-process-technology bundles in a way that facilitates both operational excellence and adaptability to change.

For example, in many companies, payment processing is built into many different products. Instead of designing payments into each product separately, a single team could design the technology and processes required for payment processing for all products. That turns payment processing into one of these people-process-technology bundles, which is a reusable component. Staff members can continually improve processes and technologies in response to the changing needs of the customers and product owners who are the components' stakeholders. The component becomes a living asset in the company.

Early research findings indicate that componentization helps organizations use data more effectively and respond to business opportunities faster. Decomposing a business into components, however, is not easy. It's a very different way of thinking about how work gets done. In addition, extracting reusable components from existing processes is a delicate operation.

The long time horizon should not be discouraging, however. Each new component adds value when implemented. Companies can stage the development of new components when it's clear that they will create value.

**Principle 2: Empowered cross-functional teams implement enterprise architecture.** Creating people-process-technology bundles represents a dramatic shift from traditional management approaches in which IT people design and manage systems, functional leaders design and manage processes, and business unit managers design roles and manage people. For this new model to work, employees must be empowered with responsibility for the processes and technology within each component.

The leadership task becomes one of formulating teams and then coaching team members to help clarify their missions, establish meaningful metrics, and design experiments to test innovations. Team members define their goals. Leaders hold teams accountable for meeting those goals and, just as important, grant them the autonomy to do so.

To fulfill their missions, component teams usually need diverse talent. The enterprise architecture effort thus requires not only componentizing the business but also assigning cross-functional teams of experts to each unit. Staff members need to understand the component's process and technology requirements, so most teams will need product experts, software developers, and user design specialists. They might also need data scientists, lawyers, finance people, or other specialists. Over time, teams will articulate their own resource requirements.

**Principle 3: Enterprise architecture influences strategy.** In responding to customer demands, empowered teams naturally identify new opportunities inspired by the capabilities of digital technologies. This creates the third essential principle of enterprise architecture: As component teams address strategic objectives, they simultaneously reformulate strategy based on continuous learning about what customers want and what digital technologies make possible.

In this context, strategy becomes both a top-down and bottom-up exercise. Leaders create new teams (or pivot existing teams) to seize emerging opportunities. When companies fund teams rather than strategic initiatives or systems development projects, those groups can respond almost instantaneously to what digital music service Spotify, for one, refers to as the company's "bets." Meanwhile, component teams can restate goals aimed at implementing high-level strategy.

# How Enterprise Architecture Guides CarMax

Enterprise architecture charts a path for gradually increasing componentization. Although the process is evolutionary, it

can be immediately effective. CarMax offers an example of a company on this journey.

Founded in 1993, CarMax is a $20 billion business created to deliver an exceptional customer experience in an industry known for terrible ones. It is the largest used-car dealer in the U.S., with over 200 stores in 41 states. CarMax's vision calls for combining online, in-store, and at-home service offerings to ensure a convenient, personalized car-buying experience.

Customer data is CarMax's business engine, and the implementation of an enterprisewide customer relationship management system to componentize, capture, and manage that data was a major architectural effort. Another key architectural effort was the introduction of empowered product teams. The company introduced its first three teams around 2015 to address what management viewed as an urgent need to improve its online customer experience.

Each of those first teams owned responsibility for one of three missions: descriptions and pictures representing each individual car, online display of those pictures and descriptions, and underlying infrastructure supporting the website. When leaders were able to document the positive results of the efforts of the first three teams, they started identifying additional components and forming other accountable teams.

Today, CarMax has more than 30 empowered teams with accountability for specified components of an omnichannel business model. These teams stick together and pivot (rather than disband) if strategic objectives change. Each team of around seven members includes a product owner, lead developer, and user designer. These cross-functional teams report into CarMax's two-in-a-box management design, which refers to joint ownership by a product manager and a technology manager for forming, developing, and overseeing the teams. This model extends all the way up to a box shared by the chief marketing officer and CIO.

Senior leaders own responsibility for CarMax's enterprise architecture, but enterprise architecture thinking permeates the company. During annual and quarterly strategic planning processes, leaders articulate business priorities. Team missions are adapted — and new teams formed — in response to changes in strategy.

Based on the company's strategic priorities, teams develop quarterly objectives and biweekly goals. CarMax tracks teams' alignment and progress in biweekly open houses. At these meetings, teams share their objectives and key results in 15-minute time slots and receive feedback from one another and interested leaders. In fulfilling their missions, teams develop insights that influence the strategic planning process. In fact, the company's embrace of an omnichannel vision was triggered by insights generated by one of the teams. That strategic shift led it to redefine the missions of four teams.

This top-down and bottom-up approach to strategy and strategy execution has not only helped the company formulate an omnichannel vision. It also enabled the business to respond rapidly to the demands of the COVID-19 pandemic: Leveraging its componentized architecture, the company needed just two weeks to roll out CarMax Curbside, a contactless buying experience.

## Start Small but Get Started

CarMax's product teams represent a small percentage of its more than 27,000 employees, and it has no plans to transition the entire company to a component-based business architecture. After all, some end-to-end processes are well suited to top-down process optimization, and some people prefer to execute delegated tasks rather than own a problem. Component teams, however, are at the heart of the company's enterprise architecture and increasing componentization.

Other businesses need to begin following a similar model. Leaders who don't start exploring radical redesign for their increasingly digital companies are at risk of committing managerial malpractice. You — whoever you are, and whatever role you fill — need enterprise architecture to guide you through that radical redesign.

## About The Author

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