

Operations Practice

# Digital service excellence: Scaling the next-generation operating model

February 2021



Operations Practice

# Digital service excellence: Scaling the next-generation operating model

Weaving digital into the entire organization will require companies to raise their aspirations, expand their toolkits, and deliver impact across the board.

*This was a collaborative effort by Federico Berruti, Thierry Chesnais, Matthias Daub, Adele Hu, Jesus Moreno, Greg Phalin, Martin Rosendahl, Tim Schenk, Rohit Sood, Xin Wan, and Rob Whiteman.*

February 2021

# Contents

<b>Introduction: Three objectives to scale digital service operations successfully</b>	<b>2</b>
<b>Part 1: Raising the aspiration</b>	<b>4</b>
The imperatives for automation success	5
Next-generation operating models for the next normal	15
<b>Part 2: Expanding the toolkit</b>	<b>22</b>
The future of customer experience: Personalized, white-glove service for all	23
Simple, predictive, proactive, responsive: The future of customer operations	28
Beyond contactless operations: Human-centered customer experience	34
An executive primer on artificial general intelligence	40
Operations management, reshaped by robotic automation	48
Sales automation: The key to boosting revenue and reducing costs	53
Making healthcare more affordable through scalable automation	61
Automation in government: Harnessing technology to transform customer experience	67
<b>Part 3: Delivering the impact</b>	<b>77</b>
Lean management or agile? The right answer may be both	78
Building the vital skills for the future of work in operations	84
Breaching the great wall to scale	92
Unlocking enterprise efficiencies through zero-based design	98

# Introduction

## Three objectives to scale digital service operations successfully

Companies have been on a journey to digitize operations for years, but recent world events, most notably the COVID-19 pandemic, are accelerating digital transformation to help organizations grow and work through volatility.

The Fourth Industrial Revolution is no longer hype; it has fully arrived and is now enabling real gains in productivity, sustainability, agility, and speed to market. However, many companies are still struggling to build on early pockets of success in a way that delivers meaningful improvements at scale and across the enterprise. There are signs that next-generation operating models are emerging within traditional organizations, but the pace of change still significantly lag behind the broader adoption of digital capabilities happening around the world.

As the urgency to shift to digital operations is growing, customers are already self-migrating to digital channels, whether to reduce in-person contact or out of convenience. Employees are working remotely, straining paper-based and handoff-heavy manual processes to the limit. These shifts are only gaining steam. Those who do not embrace Industry 4.0 risk falling behind in an increasingly competitive landscape. Companies that already started their digital transformation have been able to restart quickly in bigger and bolder ways, while others continue to struggle to deliver

services and experiences effectively in the “new normal.”

Many companies, particularly incumbents feeling the pain of disruption, are taking bigger steps to rethink how digital, automation, and analytics technologies are woven into the fabric of enterprise operations. These efforts are typically grounded in three important objectives:

1. **Raising the aspiration.** While a “thousand flowers blooming” approach can deliver one-off, narrower opportunities and incubate nascent capabilities, building true digital operations requires a more strategic and holistic approach to allocating investments and resources. Leading companies are focusing on the handful of major customer journeys and enterprise processes that matter and are fundamentally re-engineering workflows and the ways of working. Meaningful change does not come from 2 to 3 percent gains scattered across the organization. It comes from 50 percent-plus

step-change improvements in efficiency, quality, speed, and experience in the areas that matter the most.

- 2. *Expanding the toolkit.*** Teams reimagining journeys and processes need access to a full suite of capabilities and technologies. Experiences need to be engineered in a way that reflects the unstated needs of customers and employees. Workflows need to be orchestrated in a way that cleanly segments manual work from automated tasks. Organization structures should reflect the new economies of scale and skills that come along with working in a more digital environment. Companies are bringing together capabilities from multiple groups (e.g., automation, analytics, continuous improvement) to dramatically expand the available toolkit.

- 3. *Delivering the impact.*** Building digital operations is not a goal, it's an enabler of productivity, experience, resilience—primary performance objectives that can be measured for impact. Leading organizations set targets that inspire creativity, look beyond pure cost savings, and ensure every ounce of capacity created is thoughtfully reinvested or monetized systematically. They make small investments upfront to create a foundation and then double down on the most successful efforts.

In the 2021 McKinsey Digital Service Operations compendium, we explore each of these themes through specific examples and perspectives from our experts drawing on our global experience helping companies build next generation operating models.

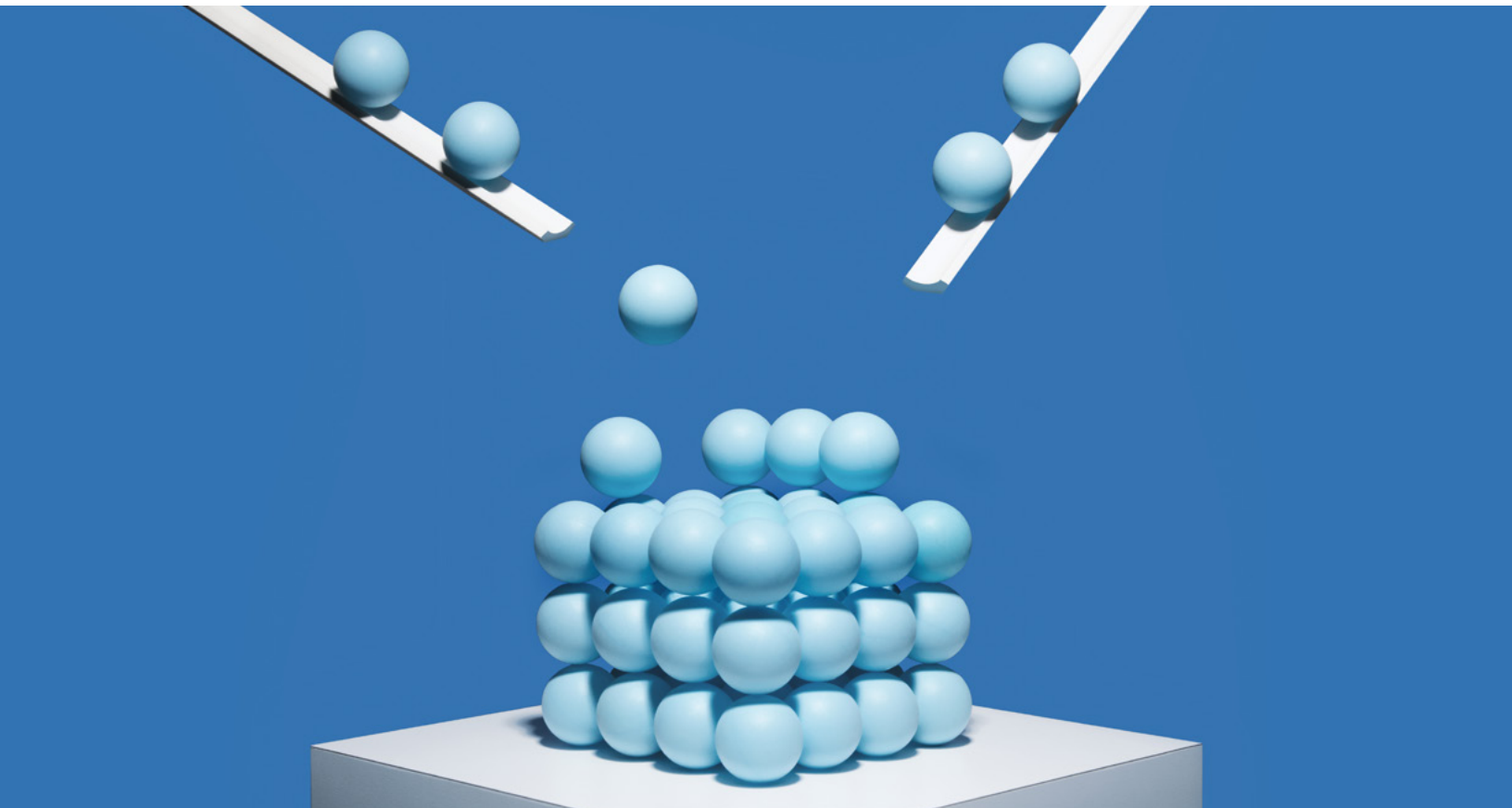
# Part 1: Raising the aspiration

The background features a series of thin, light blue lines that originate from the right side and curve towards the left, creating a sense of motion and depth. The lines are most concentrated in the lower right quadrant and become sparser as they move towards the left. The overall effect is a dynamic, flowing pattern against the dark blue background.

Operations Practice

# The imperatives for automation success

New survey findings show that organizations that successfully automate business processes follow a few common practices.



**At a time when companies** are increasingly embracing technologies such as robotic process automation, natural language processing, and artificial intelligence, and as companies' automation efforts mature, findings from our second McKinsey Global Survey on the topic show that the imperatives for automation success are shifting.<sup>1</sup> Two years ago our survey found that making business-process automation a strategic priority was conducive to success beyond the piloting stage.<sup>2</sup> This year's findings show that prioritizing automation has become even more important to enable success. They also suggest that successful organizations continue to focus on employees as much as

technology—and that they have instituted new ways of doing so in which employees work alongside the new technologies. Finally, rethinking operating models, including how different functions work together, has emerged as a new imperative.

The survey, conducted just before the COVID-19 pandemic, suggests that while more companies are pursuing automation, there hasn't been a significant change in the share achieving success over the past two years. Just 61 percent of respondents say their companies have met their automation targets.<sup>3</sup> This makes it even more important to understand the factors that enable success.

**Looking at respondents from larger companies that are meeting their automation targets, we found three distinguishing factors: they make automation a strategic priority, focus on people as much as technology, and develop an operating model that enables scaling.**

---

<sup>1</sup> The online survey was in the field from February 4 to February 14, 2020, and garnered responses from 1,179 participants representing the full range of regions, industries, company sizes, functional specialties, and tenures. To adjust for differences in response rates, the data are weighted by the contribution of each respondent's nation to global GDP.

<sup>2</sup> "The automation imperative," September 2018, McKinsey.com. We define business-process automation as the use of general-purpose technologies (for example, bots and algorithms) to perform work that was previously done manually, in order to improve the functionality of a company's underlying systems. In the survey, automation did not include the use of automation that was custom built (for example, Excel macros and custom scripts) for organizations.

<sup>3</sup> This question was asked only of respondents who said their organizations either had fully automated a process in at least one function or business unit or had set up an automation program and are scaling automation technologies across multiple parts of the business. In 2018, 56 percent of respondents said their efforts were successful or very successful at meeting their targets.



## The use of automation is growing

The findings suggest that more companies are pursuing automation now than two years ago. Two-thirds of respondents say their organizations are at least piloting the automation of business processes in one or more business units or functions, compared with 57 percent who said so in the previous survey (Exhibit 1). Most of that change comes from an increase in the percentage

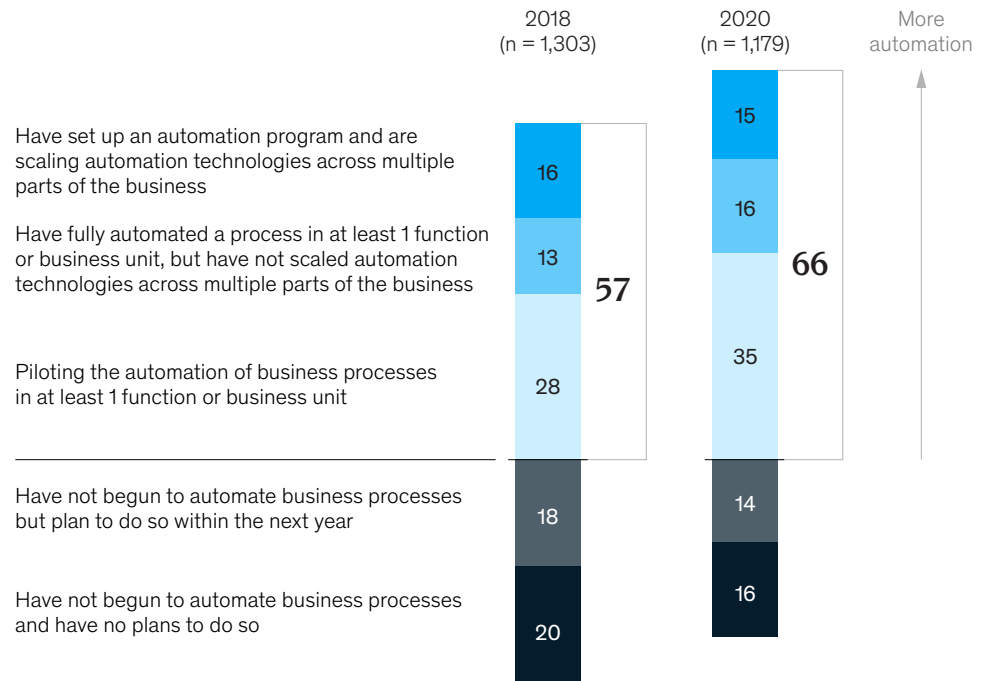
of respondents reporting pilot projects; the share of organizations that respondents say are moving beyond the piloting phase hasn't grown significantly since 2018. Of those who report that their organizations have not begun to automate, nearly half say there are plans to do so within the next year.

The most commonly deployed technologies, according to respondents, are business-process-

Exhibit 1

## The findings suggest that more organizations are pursuing automation now than two years ago.

**Actions organizations have taken to automate business processes, % of respondents<sup>1</sup>**



<sup>1</sup>Respondents who said "don't know" are not shown.

management platforms and robotic process automation (Exhibit 2). These are followed by image-recognition technologies, such as optical character recognition (OCR), and by machine-learning algorithms and automated process-mining, -discovery, and -documentation tools. We also see evidence of adoption of conversation-automation technologies such as voice assistants and chatbots.

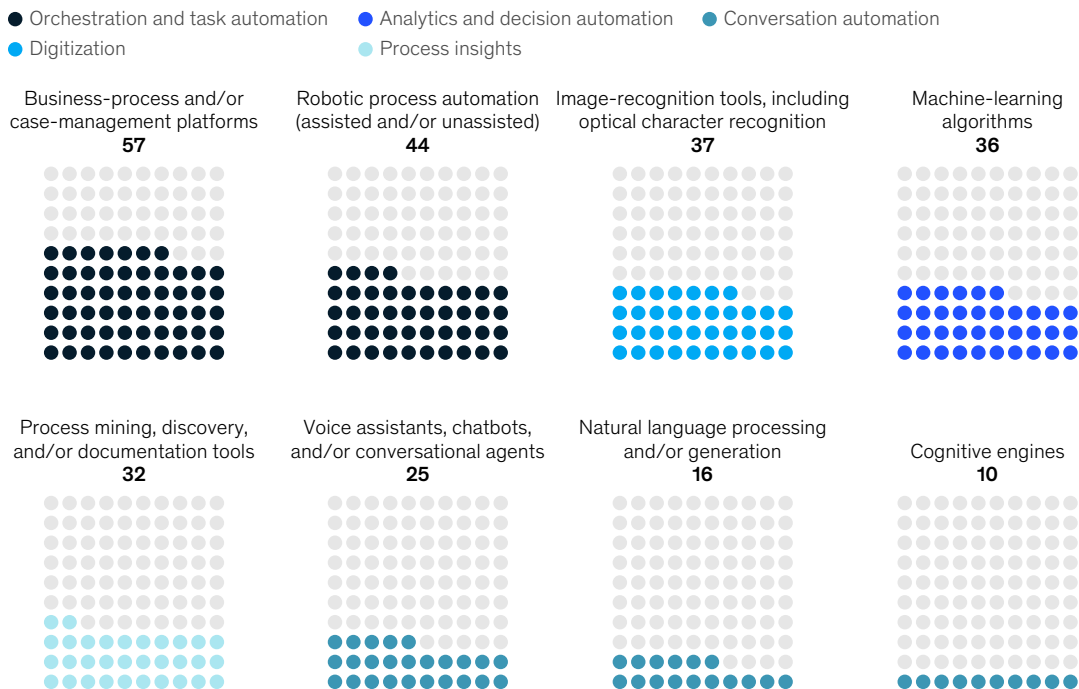
## The evolving factors in successful automation

Looking at respondents from larger companies (with \$1 billion or more in annual revenues) that are meeting their automation targets,<sup>4</sup> we found three distinguishing factors: they make automation a strategic priority, focus on people as much as technology, and develop an operating model that enables scaling.

Exhibit 2

### The most commonly deployed technologies are business-process platforms and robotic process automation.

Automation technologies currently deployed beyond the piloting phase, % of respondents<sup>1</sup>



<sup>1</sup> Respondents who said "other" or "don't know" are not shown; total n = 793.

<sup>4</sup> We define "large companies" as those with annual revenues of \$1 billion or more, according to respondents. Those with annual revenues of less than \$1 billion are classified as "smaller companies."

### 1. Make automation a strategic priority

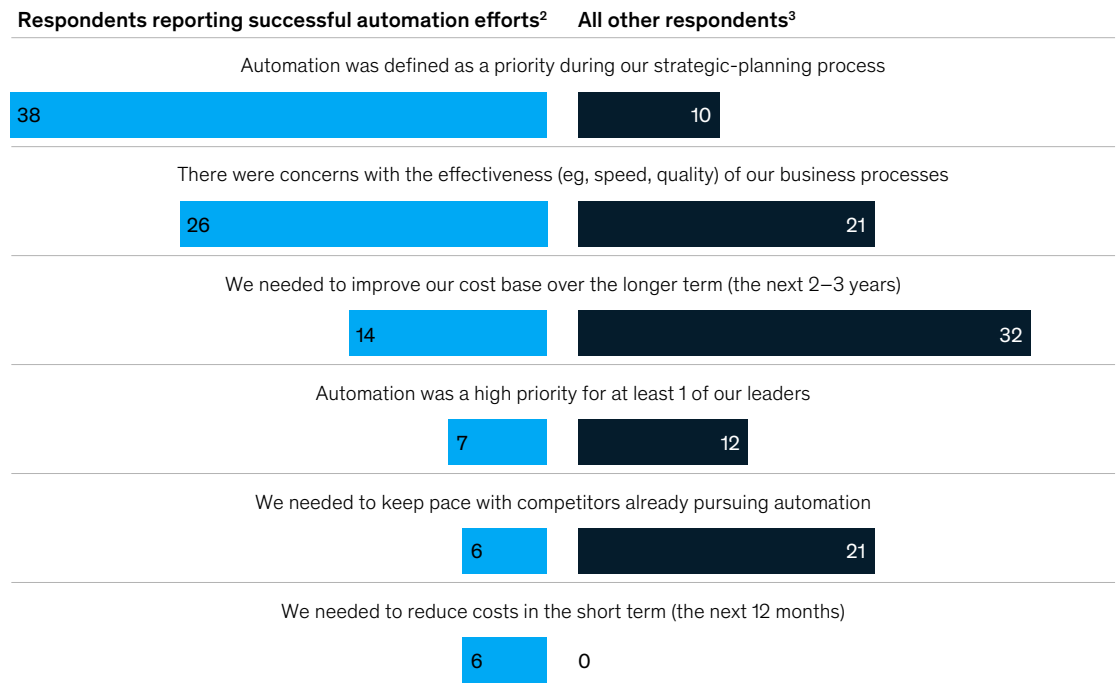
In 2018, respondents from organizations with successful automation efforts were nearly twice as likely as others to say their organizations designated automation as a strategic priority, aligning the automation strategy with the overall business strategy and placing automation high on the C-suite agenda. The 2020 findings reinforce this imperative. When we asked respondents the primary reasons their companies are pursuing

automation, 38 percent of those reporting success say their companies defined automation as a priority during their strategic planning process—nearly four times the share from other companies (Exhibit 3). What’s more, among respondents reporting success, 72 percent credit making automation a strategic priority with being one of the most important factors in their companies’ achievements with automation. Respondents from companies that haven’t succeeded with automation

Exhibit 3

## Respondents reporting automation success are more likely than others to say their organizations designated automation as a strategic priority.

Primary reason for the organization’s pursuit of automation, % of respondents at large organizations<sup>1</sup>



<sup>1</sup>Organizations with annual revenues of \$1 billion or more; respondents who said "other" or "don't know" are not shown.

<sup>2</sup>Respondents who said (a) that their organizations have fully automated a process in at least 1 function or business unit or have scaled automation technologies across multiple parts of the business and (b) that their automation efforts have been successful or very successful at meeting their targets; n = 95.

<sup>3</sup>n = 74.

most commonly say their companies are pursuing automation programs for long-term cost savings, to keep pace with competitors, or to address concerns about the effectiveness of their business processes.

We also see successful companies scaling automation across the organization. Respondents from organizations with successful efforts are nearly five times more likely than others to say the scope of their automation efforts covers the entire organization.

## 2. Focus on people as much as technology

While the 2018 findings showed that organizations with successful automation efforts were focused on skill gaps and talent acquisition, this year's research finds that successful organizations now

consider the human elements of these efforts in three ways. First, they consider and build the automation-related capabilities of their personnel. Respondents from these organizations are more likely than others to say their organizations make addressing potential automation-related skill gaps a top five priority (Exhibit 4). These respondents are also more than twice as likely as others to identify employee training and capability building as one of the primary reasons for their organization's automation success.

Second, successful organizations also gather individuals' expertise and embed it in the design of automation solutions. Respondents reporting success are much more likely than others to say their companies scale up their automation programs by using "human in the loop" solutions—that is,

Exhibit 4

## Organizations that have seen success with automation make addressing skill gaps a priority.

Share of respondents at large organizations<sup>1</sup> who say addressing potential automation-related skill gaps is a top 5 priority at their organizations, %



<sup>1</sup>Organizations with annual revenues of \$1 billion or more.

<sup>2</sup>Respondents who said (a) that their organizations have fully automated a process in at least 1 function or business unit or have scaled automation technologies across multiple parts of the business and (b) that their automation efforts have been successful or very successful at meeting their targets; n = 95.

<sup>3</sup>n = 74.

training automation platforms with people’s input over time (Exhibit 5).

Finally, successful organizations prioritize communication across the organization while implementing automation-related changes. Respondents from companies with successful efforts are seven times more likely than others to say they formally involve the communications function while implementing automation efforts, and they are more than twice as likely to say the HR function is involved.

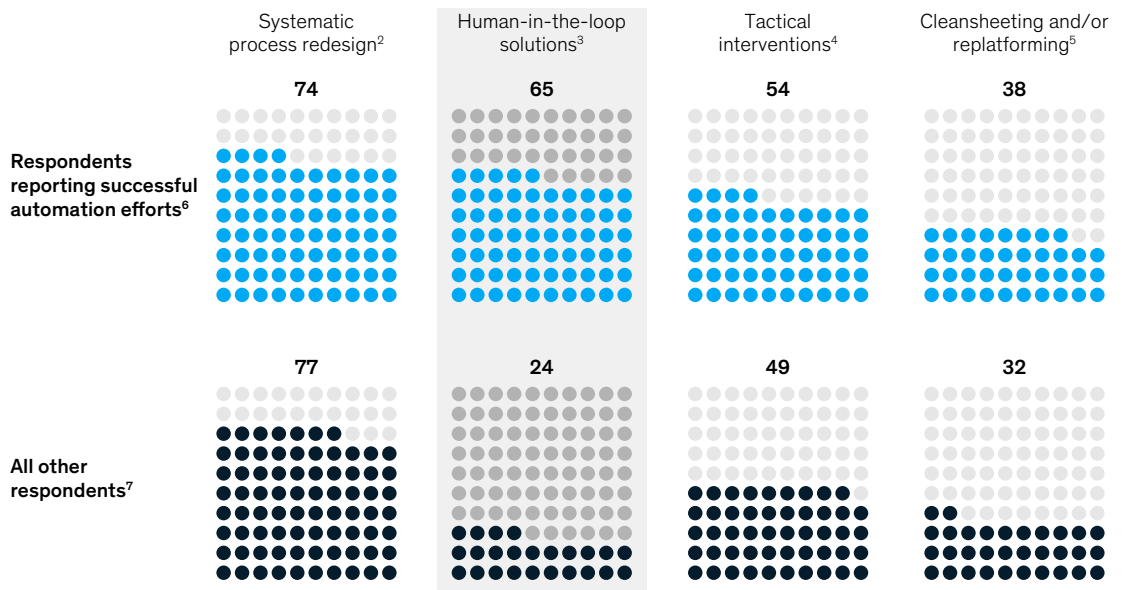
### 3. Develop an operating model that enables scaling

The responses show that large companies have automated at least one business process in an average of four functions, such as finance, IT, and customer service. As automation programs expand and grow more complex, silos within the organization can hinder performance if business areas do not coordinate closely with one another.<sup>5</sup> The findings suggest that successful companies’ operating models—their structures for coordinating activities across the organization—allow their

Exhibit 5

## Successful organizations adopt human-in-the-loop solutions to scale their automation programs.

Methods adopted to scale automation programs, % of respondents at large organizations<sup>1</sup>



<sup>1</sup>Organizations with annual revenues of \$1 billion or more.

<sup>2</sup>That is, modifying legacy processes by employing a combination of traditional levers, such as reduction of bottlenecks, and automation solutions, such as RPA bots.

<sup>3</sup>That is, training automation platforms using reinforcement learning methods over time.

<sup>4</sup>That is, deploying one-off solutions to address specific pain points within processes.

<sup>5</sup>That is, building organizational processes from scratch to incorporate automation technologies.

<sup>6</sup>Respondents who said (a) that their organizations have fully automated a process in at least 1 function or business unit or have scaled automation technologies across multiple parts of the business and (b) that their automation efforts have been successful or very successful at meeting their targets; n = 95.

<sup>7</sup>n = 74.

<sup>5</sup> Ruben Schaubroeck, Felicita Holsztein Tarczewski, and Rob Theunissen, "Making collaboration across functions a reality," *McKinsey Quarterly*, March 2016, McKinsey.com; Julie Goran, Laura LaBerge, and Ramesh Srinivasan, "Culture for a digital age," *McKinsey Quarterly*, July 2017, McKinsey.com.

automation programs to properly manage the complexity of deploying automation technologies, which makes it easier for those programs to scale.

Indeed, respondents at successful companies are more likely than others to say that coordination across business units or functions is one of the elements that will have the greatest influence on automation efforts' outcomes in the coming years (Exhibit 6).

As operating models become more complex, the findings suggest it's also important for leaders to have a full view of the costs of automation

programs that may span across the organization. Forty-six percent of respondents who report automation success at larger companies say their leaders understand very well or completely the total cost of ownership for their automation efforts. Just 10 percent of respondents at other companies say the same.

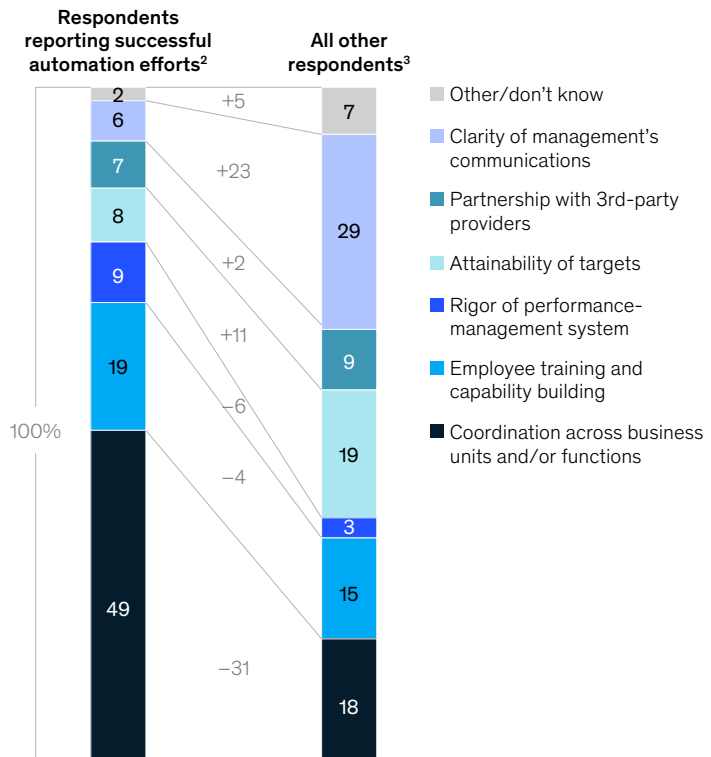
### What success looks like at smaller companies

The findings indicate that smaller companies are less likely than large companies to have automated any of their processes,<sup>6</sup> but those that have done

Exhibit 6

## Respondents reporting success often cite coordination across business units as a factor in their future automation outcomes.

**Expected contributing factors to automation success in the next 3 years, % of respondents at large organizations<sup>1</sup>**



<sup>1</sup>Organizations with annual revenues of \$1 billion or more.

<sup>2</sup>Respondents who said (a) that their organizations have fully automated a process in at least 1 function or business unit or have scaled automation technologies across multiple parts of the business and (b) that their automation efforts have been successful or very successful at meeting their targets; n = 95.

<sup>3</sup>n = 74.

<sup>6</sup> Among respondents at large companies, 41 percent say their organizations are using automation across the organization or have fully automated processes in at least one function or business unit. At smaller organizations, 26 percent of respondents say the same.

# Companies should view automation as a way to enhance human productivity, rather than a way to replace manual labor.

so are seeing a higher success rate than larger organizations. Sixty-five percent of respondents at smaller companies report success with automation, compared with 55 percent at large organizations. While the smaller companies meeting their automation targets exhibit several of the same success factors as successful large organizations, one additional factor appears to be a marker of success for smaller organizations.

As with large companies, respondents at smaller organizations are much more likely than others to consider the entire organization under the scope of automation efforts. Leaders' understanding of automation programs' costs also distinguishes smaller successful companies. Just over half of respondents at these companies say their leaders clearly understand the total costs, compared with one in five at other relatively small companies.

But at smaller companies, unlike large ones, another factor—taking a tactical approach and setting tangible objectives for automation initiatives—is also significant. Fifty-five percent of respondents at successful smaller companies say their organizations have established key performance indicators to track the impact of automation efforts, compared with 37 percent of respondents at other smaller companies.

## Looking ahead

The three imperatives for successful automation shouldn't be looked at separately but rather as

parts of the same automation mandate. As we look ahead, leaders can take the following steps to capitalize on the potential of automation.

*Identify and focus on the most critical business processes.* As organizations think about incorporating automation, they should identify the processes that, if automated, will best support their strategy. For example, in healthcare services, crucial processes can be found in customer journeys such as patient access and claims processing. Organizations can benefit from looking at these critical processes and taking a systematic approach to automating them, rather than focusing on solutions to specific pain points.

*Invest in people and new ways of working.* Companies should view automation as a way to enhance human productivity, rather than a way to replace manual labor. For example, using bots in contact centers allows employees to trigger automated data retrieval from different systems, thereby allowing them to focus on building relationships with customers. But before employees can work effectively with automation technologies, they must be taught how to do so. Companies should promote a culture of continuous learning while incorporating new technologies and should determine what skills people will need to help the organization meet its automation goals. Implementing automation programs typically requires creation of new roles as well as modification of existing ones. That calls for a well-engineered talent-management and reskilling program.

*Encourage cross-functional collaboration.*

Automating a process can require expertise in customer experience, digitization, analytics, and organizational design. These capabilities often exist in different parts of the organization, such as IT, finance, and analytics. Companies can therefore benefit from adopting an operating model that brings together capabilities from across the

organization—in collaboration with third-party service providers and vendors, as needed—to reinvent critical processes with automation. Talent rotations, cross-functional automation labs, and other mechanisms can support such an operating model and thereby help organizations realize their goals for using automation technologies.

The contributors to the development and analysis of this survey include **Gary Herzberg**, a consultant in McKinsey's New Jersey office; **Rohit Panikkar** and **Rob Whiteman**, both partners in the Chicago office; and **Anand Sahu**, a consultant in the Silicon Valley office.

Designed by McKinsey Global Publishing  
Copyright © 2020 McKinsey & Company. All rights reserved.



Operations Practice

# Next-generation operating models for the next normal

Changing stakeholder behavior may lead companies to reconsider how they operate.

*This article is a collaborative effort by Tarik Alatovic, Vladimir Kulagin, Andriy Radchenko, Sergey Savitskiy, and Sonia Wedrychowicz, representing views from across the McKinsey Africa and Middle East Practices.*



© Getty Images

**Physical distancing, working remotely,** travel barriers, and the psychological impact of isolation have changed the behaviors of stakeholders in every organization, creating unexpected challenges. While it is too early to predict the long-term outcomes and trends prompted by the COVID-19 pandemic, the most likely scenarios suggest organizations will be operating in a next normal environment for the foreseeable future.

Changes in internal and external stakeholder behaviors mean that companies may wish to reconsider how they operate and act now in order to emerge stronger after the pandemic. This may include starting to think about and plot their transition to a next-generation operating model best suited to the next normal.

### **Impact on three key stakeholder groups**

These next normal changes will affect the behaviors of three key stakeholder groups—customers, employees, and vendors and partners—in different ways.

Customers could shift their purchasing preferences to avoid physical channels, adopt more digital services, and demand more from delivery services. Customers might also adapt their consumption patterns by consuming less, focusing on essentials, and delaying the upgrade of devices and services—not including those that now help consumers to maintain ties with the outside world, like computers and smart phones, as well as remote communication and entertainment packages. COVID-19 may also impact customer psychology in the form of growing anxiety and boredom. For example, customers could feel an increasing need to own items rather than renting for sanitary reasons.

We have also seen people making new and renewed commitments to values and goals (for example, balancing time spent at work and with family), and preparing to make meaningful trade-offs that will shape their life choices long after the current crisis passes. At the same time, people are weighing the values and risks in everyday decisions about who they spend time

with, where they go, what they do, and what they buy. In an uncertain environment, people are asserting control in their lives wherever they can (for example, diet, spending, and environment) to feel safer, more comfortable, and to safeguard their futures.

The way employees work is changing, as they become more accustomed to remote working and virtual interactions. McKinsey research shows that employees with a stable, secure work experience working remotely report an increase in positive work effectiveness and well-being. However, employee experiences are varied, and families working from home and those without remote work options have additional considerations. Moreover, job cuts could make the labor market more competitive, which has wider implications for employers.

Vendors and partners might be considering scaling down activities and operations, focusing on the short term, delaying non-essential investments, and attempting to cut costs. They may pay greater attention to social responsibility, putting the containment of the human consequences of the pandemic before profit optimization. At the same time, vendors and partners could shift to digital channels, reducing the need to visit customers on-site.

In recent interactions with executives, we found the majority thought most customer demand for business origination, servicing, and renewal would be fulfilled online via digital, mobile, video, and chat, while only a minority expected future operations to be conducted virtually. Companies also face additional challenges regarding productivity: more than half those we engaged with believed that their organizations will face pressure to boost productivity by more than 10 percent year-on-year to compensate for the loss.

Customer, employee, vendor and partner shifts have implications across the value chain, impacting product, sales and channels, and services and support. They also affect workforce models, office operations, and vendors and partnerships.

This article uses examples from around the world to look at some of these behavioral shifts in more detail.

**Sales and channels: Shift away from large POS**

To adapt to changing customer buying behavior, companies can move from large points of sale (POS) to a reduced number of small, human-less POS, and promote digital channels. Many companies made this shift before the pandemic, others are only looking at it now. The logistics group DHL launched contactless delivery and payment through automated pickup points, while a well-known auction house now conducts virtual reality-enabled sales through digital channels. A leading automotive group from Europe uses pop-up stores to introduce new products in relevant locations at relevant times, leveraging artificial intelligence. A big telecommunications group optimized its marketing efforts by reallocating budget to digital channels.

Amazon offers another strong example of this trend, with its Amazon Go physical stores providing uniquely innovative customer experiences. Amazon Go customers scan a smartphone app when they enter the store—the only point at which a phone is required. Bluetooth beacons on the shelves automatically

detect items collected by the customer, with products added or removed from their digital basket based on data from shelf weight sensors. When customers leave the store, they receive a price list of purchased products, with the amount shown later debited from their Amazon account. As well as offering convenience, this approach also addresses customer demands for minimizing human interactions when shopping.

In another example, a telecommunications company migrated the sales process of upgrading price packages to a mobile-first channel. This streamlined the workflow from 14 steps to a more personalized three-step process, resulting in significantly higher conversion rates.

**Product: Keep it simple to drive digital sales.**

One way of meeting customers' changing demands is to simplify products to spur digital and remote sales. For example, Zain Saudi has rapidly developed digital products catered to changing needs of its customers. Zain launched end-to-end digital operator Yaqoot in Saudi Arabia, as an example of "sophisticated simplicity," combining fully digital connectivity experience with digital gifting services.

**The next-generation operating model is mainly driven by providing simplicity, speed, and convenience to customers, employees, vendors, and partners, predominantly using digital channels.**

The userbase has grown quickly during the pandemic. Contactless customer experience (with e-SIM) is an example of new era service while physical distancing is part of everyday life. The operation is part of a Kuwait-based telecom group. Simplified products are more suitable for sales over digital channels, making them a much better fit for the next normal.

In addition to the simplification of their products, many companies are looking at developing pricing models that encourage consumer loyalty, rather than short-term promotions, which tend to drive them away at the end of the promotion.

#### **Service and support: Move to a remote digital service**

Organizations can change their service and support to meet the new behaviors of their customers and employees. The Singapore-based bank DBS, for example, serves customers through digital virtual teller machines and kiosks instead of physical branches.

The digital-native Russian bank Tinkoff set up cloud-based call centers with freelance employees. The bank, focused entirely on remote servicing, launched the cloud contact center in 2012 and now has 14,000 call center operators with 6,000 of them making 500,000 customer calls a day from their homes. Most operators are non-bank employees located in cities where salaries are lower than in Moscow and have flexible work schedules.

Tinkoff's costs of selecting, managing, and training telephone operators are offset by savings in the rental of offices and equipment for workplaces. Reducing costs also allows the bank to pay higher salaries: Tinkoff operators working remotely earn 30 percent more than regional operators working from the office. From 2012 to 2017, the bank more than doubled its credit card portfolio.

In telecommunications, companies are being launched with digital-only offerings that have

redefined customer experiences and are gaining considerable traction. The digital-only value proposition is based on consumers signing themselves up, resulting in 100 percent of customer interactions conducted through digital channels, with over 80 percent of all customer-care activities completely fulfilled online. In this model, online referral programs become a major source of customer acquisition, accounting for up to 15 percent of total sales.

#### **Workforce: Shift from stable to flexible workforce models**

Companies can adapt to the changing needs of employees by shifting from a stable workforce model to a more flexible one. For example, one online food delivery company has established a fully variable and performance-based remuneration system.

One British subprime lender offers doorstep lending—credit cards, home-collected credit, online loans, and consumer car finance—conducted by a self-employed workforce.

Agents called customer experience managers go door-to-door to market small, unsecured loans and make collections, using handheld technology to control credit issuance, follow up on customer leads, and log complaints. In the case of this lender, the managers visit customers weekly to check in and collect payments, following a flexible work model and receiving commissions based on sales and collections. Providers suggest that the face-to-face model has led to lower default rates as lenders build closer relationships with their more than 800,000 customers.

#### **Office: Shift to digital remote office operations**

Organizations have already shifted to digital remote office operations and have begun conducting large-scale meetings and events remotely as a default modus operandi. Many digitalization projects have been prioritized

as organizations seek to minimize disruption and create value in real time while also creating a solid foundation for the future.

One leading insurer introduced automation for routine tasks, deploying 13 software bots that perform repetitive administrative tasks, like filing customer correspondence in the claims department. The bots extract information from customer correspondence and match it with their account details, successfully completing the task in 42 seconds rather than the four minutes it takes an employee. This frees up employees to perform higher-level tasks and focus on more complex claims that require experienced professionals. Robots now assist the customer with property claims, commercial property, and the liability units teams. This automated solution saved 18,000 hours of human labor, which equates to roughly \$173,400 in productivity gains.

Meanwhile, agile ways of working, which typically involve physical proximity of team members, have proved effective in a remote working environment. Many in-person agile practices including meetings and quarterly business reviews are being conducted online without disruption.

Companies have also established new working norms and models. For example, one telecom company established flexible working hours (two-hour shifts) that also allow employees to work from preferred locations, while other companies use lean office approaches, including hot desking.

### **Vendors and partnerships: Shift to collaborative lean partnerships**

Organizations can adapt to the changing preferences of vendors and partners by shifting to more collaborative and flexible partnerships, which can take different forms. For example, a leading IT consultancy firm works with vendors remotely rather than on-site to decrease vendor travel and office costs. In another example, a cosmetics firm works with their customers as a partner in product design, production, sales, and delivery. Other organizations

provide agreements with certain vendors to build relationships and long-term opportunities; for example, Alibaba Group supports small and medium-sized enterprise suppliers with extended lines of credit.

Some automotive players are using a design-to-value (DtV) approach to radically optimize cost while maintaining a win-win relationship with suppliers.

When redesigning wiring architecture, one automaker used discussions with current customers and product teams as well as competitive analysis to inform their approach. With a more rigorous and structured focus on value to the end user and a collaborative partnership with suppliers that included cost-reduction workshops, the automaker was able to achieve substantial savings.

Another leading European car producer held over 50 follow-up meetings after each supplier workshop to prioritize ideas and plan implementation. Additionally, it held DtV workshops to compare high-value parts to those used by core competitors. The company generated and quantified in monetary terms more than 80 ideas per day and established cross-functional teams from original equipment manufacturers and suppliers

We have also seen a trend where partnerships are formed based on a complementary understanding of customer needs, where both partners can combine knowledge to create value. Recently, a partnership between India-based Jio Platforms and Facebook's WhatsApp redefined the way the telecommunication company could create value with the social platform—JioMart, the Jio Platforms' small business initiative, and WhatsApp now allow customers to connect directly with businesses and purchase products through a seamless mobile experience on WhatsApp. This idea will be further expanded to connect other businesses, shops, and purchased products through WhatsApp.

### **Management systems of a new model**

Faced with the uncertainty of the new reality, companies have started looking at accelerated ways of adapting to virtual management models. A key component of such an adaptation includes a need for a clear distinction between processes that will remain physical versus those that will move fully or partially into the virtual space. Organizations can design remotely implemented productivity controls that perform a regular and thorough walk-through of digital sites. In addition, leaders can maintain management systems and side-by-side coaching with agile methods combined with collaboration software.

### **IT enablement of journeys including cybersecurity and operational risk mitigation**

To effectively respond to the fast-changing environment, companies may consider using automation, advanced analytics tools, and digitized processes to enhance customer journeys and respond quickly to customer demand fluctuations. New capabilities will be built based on expanded human-technology interactions, and these interactions will also help

organizations collect data and insights for an IT-led productivity increase.

New operating models will inevitably introduce new risks that must be addressed. By embedding the appropriate controls in the design of the model versus after implementation, companies can take a more proactive posture to mitigate risk. In next-generation operating models, risk management should be incorporated into all processes across operations functions, with specific practices for on-site, remote, and digital activities.

### **How to approach post-COVID-19 operating model change**

Even as COVID-19-related restrictions begin to ease, organizations will face a new reality. Those that adapt quickly will gain first-mover advantages and may capture untapped market niches.

Our research on operating model changes suggests that it is critical to set a clear aspiration for the operating model linked to strategic

**To adapt to changing customer buying behavior, many companies have started promoting contactless ways of delivering their goods and services, even in physical outlets. Some have made this shift before the pandemic, others are only looking at it now.**

priorities and future needs. Certain changes, such as physical distancing, increased digital adoption, or demand changes due to lower purchasing power, are obvious and many are responding with solutions. But take a step further to understand how observed customer behavior and that of employees and contractors has changed. Survey new customers' fears and unmet needs and reflect whether each operating model component aligns with new expectations or whether a specific change is required.

Get inspired by best practices. Learn how companies change their operating model and try recognizing common patterns. Certain changes could be followed as emerging best practices: digitize sales and service channels, ensure proper physical distance between customers and employees, work together with partners to save on cost, and try keeping remote working and collaboration. There is also room for brand new ideas. A very pragmatic approach might be to look for examples in other industries and try those in your company operating model.

## Setting up for the postpandemic world

Although the outlook for COVID-19 and the shape of the new normal is difficult to predict, organizations have a variety of options to adapt to changing stakeholder behaviors (see our recent article: [“Ready, set, go: Reinventing the organization for speed in the post-COVID-19 era”](#)). Many trends linked to physical distancing and remote working will continue after the crisis is over and organizations can prepare now for these emerging long-term trends. The changes will affect customers, employees, and vendors or partners in a number of ways and organizations are already shifting to meet these trends, from moving to radically-simplified digital products to establishing remote office operations. Companies may need to come up with a robust approach to help them transform their operating model to meet the demands of the next normal across all stakeholders—a process that can give any organization the edge in the post-COVID-19 world.

**Tarik Alatovic** is a senior partner in McKinsey's Johannesburg office. **Vladimir Kulagin** is a senior partner in the Moscow office, where **Sergey Savitskiy** is a partner. **Andriy Radchenko** is an associate partner in the Dubai office, where **Sonia Wedrychowicz** is a senior adviser.

Copyright © 2020 McKinsey & Company. All rights reserved.



# Part 2: Expanding the toolkit



Customer Care Practice

# The future of customer experience: Personalized, white-glove service for all

The next horizon of customer service will be built on individual customer profiles, enabling companies to quickly resolve issues and even prevent them from occurring.

*by Rohit Agarwal, Raelyn Jacobson, Paul Kline, and Maurice Obeid*



© AndyL/Getty Images

**The future of customer service** is already here. Laptops silently report impending performance issues, triggering a remote fix before the user even realizes there might be a problem. Vehicles send proactive maintenance notifications and communicate directly with manufacturers to speed up repair response when a problem occurs. The next horizon is for customer service to be completely customized to each individual: when a customer calls a contact center, the agent can pull up a profile detailing the customer's every interaction with the company, from previous service calls to payment schedules to marketing segmentation.

Such personalized service can be compared to the "white-glove service" long associated with high-value customers and transactions. Characterized by attention to detail, convenience, speed, and emotional fulfillment, this high standard of service offers solutions, products, and services that are tailored to each customer's specific and unique needs. It is central to a customer-first mindset and made possible by the availability of data and advanced analytics to track a customer's individual journey in real time.

Yet very few organizations are providing this level of service today. There are two primary reasons for this. First, many believe it to be prohibitively expensive. Second, building a comprehensive customer profile requires a high level of cross-departmental visibility, which in turn necessitates enablers such as organizational structure changes and IT investments. To offer high-touch service to everyone, customer service can no longer be an isolated department; it must be tied into every business unit that interacts with the customer, including sales, marketing, product design, collections, and the front line.

The good news is that white-glove services offer a high return on investment. In fact, they present an opportunity for significant cost savings because they accelerate the resolution of contact center issues (or prevent issues altogether) and deepen

customer trust and loyalty, thereby supporting retention and tailored cross-selling. And, while such services require technology investments and shifts in organizational structure, these investments and shifts will soon become mandatory as companies compete to meet customer expectations. All functions will benefit from the enterprise-wide visibility required to build comprehensive profiles of individual customers.

### **The modern reality: White-glove service is both inevitable and economical**

Modern customers increasingly expect highly personalized service. Providing such service offers several benefits to the organization:

- **Deeper customer trust and loyalty.** Companies can win lifelong customers by creating a seamless experience across all touchpoints and providing the right service or product to meet individuals' needs.
- **Reduced need to call.** Proactively resolving issues or contacting the customer can significantly decrease the volume of calls that reach the contact center. Improved prediction of intent and first-call resolution will also reduce repeat calls and average handle time. Digital channels can also reduce customers' need to call—and the move toward digital service capabilities has accelerated in recent weeks and months as the COVID-19 pandemic has led to physical-distancing and shelter-in-place requirements.<sup>1</sup>
- **Reduced costs.** Traditional customer service is the same for all customers—for example, businesses typically create standard solutions for all disgruntled customers. Companies that know customers individually can tailor solutions to meet individual customer needs, possibly at lower cost to the organization—for example, offering a simple apology rather than a gift card.

---

<sup>1</sup> For more, see Jorge Amar, Raelyn Jacobson, Becca Kleinstein, and Allison Shi, "Redefine the omnichannel approach: Focus on what matters" in this compendium.

# White-glove services offer a high return on investment.

- **Increased revenue.** Individual customer profiles also enable companies to take a needs-based approach to selling, replacing the standard one-size-fits-all approach—such as walking the airplane aisle with a credit-card offer—with tailored outreach with higher acceptance rates. In our experience, some organizations have seen a revenue increase of 30 percent or more from adoption of a needs-based approach and proactively reaching out to customers at the right time with the right offering.

These benefits can far outweigh the cost of the investment required. Historically, white-glove service was costly because it required companies to hire highly trained, premium agents and expensive concessions, but today it involves investments in IT, data management, and advanced analytics as well as change management and training. A systematic analytics capability enables organizations to analyze the whole population of customers—after which adding a new person comes at almost negligible cost. Once a company has developed a methodology to identify needs, execution is far simpler and the service is ultimately cheaper to deliver. This is increasingly true as digital capabilities become more ubiquitous and less expensive.

## What must change

In our experience, the vast majority of customer service operations are reactive, with a primary focus on resolving customer queries—which is just

one small piece of the customer journey. This is because most customer service units are currently siloed. They lack transparency into, and integration with, all the various departments that interact with customers, including back-office functions such as marketing and sales as well as frontline employees in stores and branches. Put simply, the right hand needs to know what the left hand is doing. A company can have all the data in the world on an individual customer, but to be useful the data must be structured to enable insights and shared with the right functions. There are two primary components to building a highly sophisticated and cutting-edge customer service function: understanding and anticipating customer needs, and implementing enablers to facilitate the development of comprehensive individual profiles of customers.

## Understand and anticipate customer needs

Based on customer awareness of an issue and the organization's ability to respond either reactively or proactively, customer needs can be broadly categorized into three major archetypes:

- **Preventing issues.** Proactive customer service can endear a company to its customers by preventing issues before they occur. For example, a global help desk uses back-end analytics to track computer performance and notices that certain systems are experiencing slower-than-average performance due to pending software updates and so forth. The help desk silently dispatches a fix to all

computers that meet similar parameters to prevent them from having a similar slowdown.

- ***Solving problems before customers raise them.*** Busy customers experience white-glove treatment when they know they have an issue but the company raises it first—and solves it. For example, a customer stuck in traffic on her way to the airport gets a proactive alert from the airline, telling her she's likely to miss the flight given her current location and offering alternative flight options. Early detection of financial fraud is another example, but many companies have only scratched the surface of such proactive problem solving.
- ***Personalizing responses when customers reach out.*** When a customer does request help, companies can still provide exemplary service by predicting her needs based on her individual profile and providing a personalized response. For example, a utility's interactive voice response (IVR) system determines that a customer is calling about a bill that is higher than usual. The IVR runs analytics on the back end to review the bill and link it with data on recent temperatures and bills from similar customers in the area, quickly equipping the customer service agent to explain and provide a detailed report for the customer.

#### **Implement organizational enablers**

Building a mature customer service capability means building well-informed individual customer profiles—which, in turn, requires the customer service function to have visibility into the end-to-end customer journey and play a vital role in managing the customer relationship beyond simply resolving issues. To create the necessary transparency and capabilities, companies need a set of overarching, foundational interventions. Organizations can consider all these interventions from the start and pursue them at their own pace.

***Facilitate cross-functional collaboration on customer data.*** Most organizations are unlikely to be able to meet the needs of customers in each of these three archetypes without increased

collaboration and integration among the service, sales, and marketing functions, as well as significant IT support. To enable this collaboration, companies need to create feedback loops and break down silos in an effort to facilitate the transparency required to build comprehensive individual customer profiles and shepherd customers through touchpoints with the organization. For example, if customer service knows when a customer placed an order thanks to collaboration with sales, the company can reach out proactively to confirm order status and avoid shipping issues.

***Build robust data and analytics capabilities.*** A major hurdle to building comprehensive customer profiles is establishing clean customer data. Historically, customer data is duplicated, conflicted, and fragmented across the systems and functions at most organizations. Data “sources of truth” are not always clear, and multiple systems may be able to update the same customer record. Furthermore, much customer data is unstructured and, thus, difficult to glean insight.

Building a customer-focused organization means not just implementing one system but stringing together an ecosystem of capabilities and integrating them with business processes. It requires closing the loop on the end-to-end customer journey using advanced customer relationship management (CRM) systems and continuous data curation. The maturity of the available technology, data integration, and organizational setup determines the level of personalization that an organization can provide as a starting point. And companies should establish continuous technology adoption, data-integration initiatives, and organizational restructuring to improve personalized services to customers.

When an issue does arise, functions can work together to determine the root cause of the issue and address it through process transformation and automation to ensure that the issue does not recur. For example, an insurance company was experiencing high call volumes from customers asking simple questions about account details. It

used an analytics-driven root-cause analysis to determine the cause of the issue: the company was using a third-party vendor to handle its welcome packages, and customers were not receiving their welcome packets on time.

Proactive issue identification is not possible without data and analytics. Companies can use advanced analytics on available customer data to offer services or products based on the customer's recent behavior. For example, a credit-card company may be able to use the shopping data of a customer who bought a plane ticket to provide need-based offers such as a lower foreign exchange rate on purchases in certain countries.

*Implement change management.* Driving company-wide change is never easy, so a change-management effort that is built around a shared purpose is crucial. Companies can start by identifying the right stakeholders, categorizing them by their level of influence and the change in their remit, and mapping them on a change-influence matrix to determine who to involve, who to engage, and who to keep in the loop. Companies need to understand the underlying mindsets that drive employee behavior to determine the right interventions, such as role-modeling and targeted capability development, and to reinforce desired

behaviors. The goal is to go beyond compliance and engender true commitment to the customer experience and the organization's ability to provide white-glove service to all.

A crucial component of change management is empowering frontline employees to resolve issues by making an appropriate offer or presenting a personalized solution. When frontline employees have the proper authority to take action based on an individual customer's attributes, needs, and situation, they can take ownership of the interaction, determine the root cause of the issue, and equip customers with self-service tools to resolve similar issues in the future.

---

Customers increasingly expect every service organization to work tirelessly in the background, preventing issues before they arise; knowing when, where, and how to get in touch; and proactively reaching out where necessary. Mounting such a customer service function requires an understanding of customer needs and organizational enablers that facilitate data collection, analysis, and sharing. Organizations that get it right will continue to set the pace for peers across industries.

**Rohit Agarwal** is an expert in McKinsey's Boston office, **Raelyn Jacobson** is an associate partner in the Seattle office, **Paul Kline** is a senior expert in the Dallas office, and **Maurice Obeid** is a partner in the New York office.

The authors would like to thank Vinay Gupta for his contributions to this article.

Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Simple, predictive, proactive, responsive: The future of customer operations

For happier customers and lower costs, companies need a better way to steer their digital-service transformations.

*by Varun Atre, Julian Raabe, Tim Schenk, and Rohit Sood*



© Getty Images

**For telcos, banks, insurers, energy retailers,** and others in similar service-based industries, it has always been difficult to stand out from the crowd. With limited opportunity to differentiate their product offerings beyond geographic coverage, these businesses typically compete by offering a combination of low prices and a good customer experience to drive acquisition and retention. A key challenge for such organizations is ensuring that they can deliver each of those elements without compromising the other.

The pressure on both sides is becoming more acute. Incumbents are facing intense competition from new, digital-native market entrants, leveraging others' infrastructure and offering radically different sales, service, and support models. This disruption, along with saturated markets in many sectors, has triggered a war for share that has driven margins down to historically low levels. Customers are becoming less loyal, too: in mid-2020, 36 percent of US consumers reported trying a new product brand in the previous three months.

Those forces were in play before the COVID-19 crisis, but the pandemic has been a catalyst for more rapid and radical change. As the mass transition to remote working has increased demand for reliable service and rapid problem resolution, companies have struggled to provide this reliability as they faced reduced call-center capacity and mixed levels of resilience from outsourced service providers. A weaker call-center experience has thus encouraged customers to migrate to self-service digital channels in search of a quicker resolution to their requests.

All this is driving companies to redouble their efforts to integrate new technologies into their customer-service operations. Companies rightly see digital tools—such as user-friendly, artificial intelligence (AI)—assisted self-help options and advanced analytics—based issue prevention—as a way to achieve significant productivity improvements, while also offering a better customer experience. For companies, the big shift has been the urgency of the transition, with leaders wanting to transform both service and cost in 12 months or less, rather than three years or more.

Achieving this ambition will require a new approach, an expanded toolkit, and a big mind-set shift away from today's standard approach to service innovation—which tends to focus on the introduction of narrow solutions addressing individual service channels or specific customer touchpoints. Instead, companies have an opportunity to think more holistically, aiming for an environment where the most popular service options are also the best and the most cost-efficient.

Companies can succeed by doing three things well:

- Go for every opportunity, but prioritize upstream solutions
- Offer great service across all channels, but be distinctive in zero-touch self-serve
- Go beyond the business unit (BU) walls with a whole-company approach

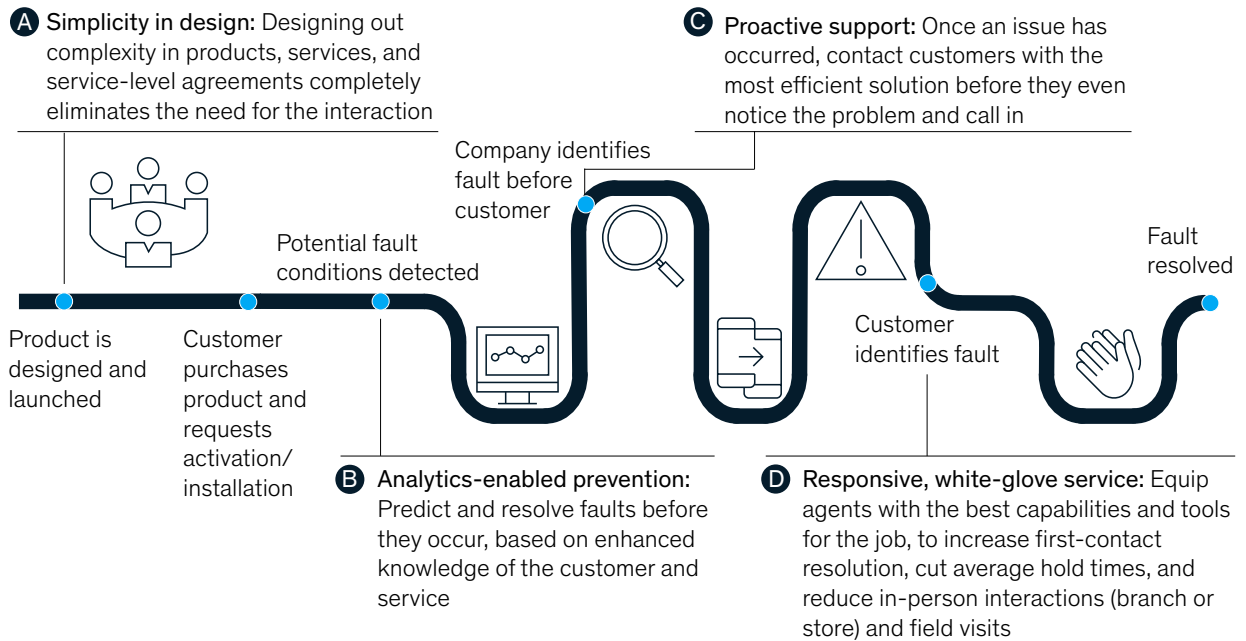
### **Go for every opportunity, but prioritize upstream solutions**

To unlock maximum value, companies need to address every opportunity to improve productivity while delivering a better service experience. In doing this, however, they should recognize that some strategies are naturally more efficient and more likely to please customers than others. The best kind of fault in a broadband service, for example, is the one that never occurs. The next best is the one that the provider resolves automatically with minimal inconvenience to the customer. Four sequential levers enable companies to build such low-cost, high-satisfaction service offerings (Exhibit 1).

#### **Simplicity in design**

Removing unnecessary user complexity from products, services, and service agreements can eliminate the need for customer interactions at a stroke. Nobody likes to receive a bill, but the best bills are ones that are expected, include breakdowns that are easy to understand

**Every opportunity can be addressed, with a preference for upstream solutions.**



(and, ideally, charge the same amount each month). Disputes over excess data charges, for example, can be prevented by offering mobile-phone packages with unlimited usage, or by sending SMS update messages warning of an impending speed throttle before a monthly cap is exceeded. On the hardware side, broadband modems with a built-in 4G backup can automatically switch over if there is a fixed-line service outage, maintaining the customer’s internet connection. In energy, ensuring realistic prepayments that account for seasonal usage variations can prevent end-of-year bill shock.

**Analytics-enabled prediction**

Advanced analytics can help companies predict potential problems even before they occur. That allows them to take action to prevent or address the problem in an efficient way, reducing costs for the company and inconvenience to the customer. Such approaches can derive a wealth of knowledge from preexisting but underutilized data, such as customers’ usage patterns, equipment data (from smart modems or similar equipment), network data (including maintenance routines) or weather records.

If multiple households in the same street experience poor broadband speeds during rainstorms, for example, data from their smart modems can trigger a single field visit to resolve the issue at the pit, saving many phone calls and slower, exploratory field visits. While on site, the technician can also perform upcoming scheduled inspections at other pits in the locality, replacing end-of life components and saving further future visits.

These predictive approaches can also create “wow” moments for customers. A provider might do this by sending a replacement battery for the customer’s device before it fails, based on accumulated usage, or providing additional hardware to eliminate poor wireless performance based on analysis of network traffic.

**Proactive support**

Companies can use the same analytics-driven approaches to put themselves one step ahead of their customers when issues do arise. By identifying problems before their customers do, suppliers can reach out proactively with potential



solutions, encouraging the customer to use the fastest, most cost-effective resolution channel.

Comparing current and historical energy usage, for example, can enable an energy supplier to see that a pre-paid customer is likely to exceed their usage cap. Through its app or via text message, the supplier can then contact the customer offering recommendations and a self-serve mechanism to extend or upgrade their plan. Banks might apply similar mechanisms by proactively notifying customers of unusual payments (such as foreign transactions), providing a quick in-app confirmation or request to pause the transaction, instead of requiring the customer to initiate contact or go through a complex charge-reversal process later on.

For a telco, smart modems can detect intermittent WiFi before the user becomes aware of the issue. That can trigger a message in the user's app that either directs them to the relevant one-minute self-help guide, or offers a scheduled callback by a support technician. At one European telco, creating this wow moment cemented customer loyalty and halved the company's churn rate.

#### **Responsive, white-glove service**

Some issues cannot be designed out, predicted, or proactively resolved. In these cases, where the customer does need to initiate contact, they should receive responsive, white-glove service, regardless of the engagement channel they choose. Service-response systems should make good use of all available data to rapidly understand the customer's situation and context, diagnose the problem, and guide them to best solution.

One European telco, for example, has created an analytics engine and a new customer-service interface at its contact centers. The system identifies customers automatically, immediately presenting the agent with relevant account information, such as recent modem dropouts, call history, and billing anomalies. As soon as the agent answers the call, everything needed to resolve the customer's issue quickly and seamlessly is at the agent's fingertips.

Reducing the work required to verify and diagnose issues also enables care agents to focus on empathizing with customers and ensuring that

problems are truly fixed, rather than following rigid checklists. The absolute majority of customers say that they want to have their requests resolved in the first contact, without being transferred to multiple departments or service agents. That makes first-time-right a north-star ambition for companies, which are reconfiguring their service teams in response. A payments provider, for example, now ensures its frontline teams cover a range of skills, including not only sales agents but also specialists in security, settlements, compliance, and other back-office functions. One team therefore remains responsible for each customer until the request is fulfilled, minimizing the risk of losing the request in poor handoffs between functions.

#### **Offer great service, especially in zero-touch self-service**

Each of these four changes can yield benefits across different customer-engagement channels—but for highest impact, they can be applied in an integrated way to address issues with minimum effort. This same thinking applies as much to interactions within the company as to those with customers.

*Zero-touch, digital self-service* becomes the preferred form of service for both the customer and the company for most interactions. Sales and customer onboarding involve easy-to-navigate subscription-style products, whose pricing and terms are simple and that can be purchased online or in-app. Wherever possible, after-sales service and inquiries (including complaints) use accessible, in-app digital diagnostics and self-guided tools. Easy-to-follow instructions that customers can drive themselves lead to faster, less frustrating outcomes than waiting on hold in a call-center queue.

*Automated, AI-enabled service* improves experience and accelerates service without requiring human intervention on the company side. Automation is highly scalable, supporting a virtually unlimited number of customers without adding more support personnel. Promising use cases include keeping customers up to date on their consumption versus their plan allowance; automatically monitoring service quality and

proactively reaching out to resolve detected issues (via self-service wherever possible); and enabling agents to answer customer queries faster.

*Human-enabled channels* feel the benefits of design for simplicity through a reduction in contact volumes. These channels, including contact centers,

Exhibit 2

**Across channels, four changes can help generate more value from digital services.**

	1 Design simplicity	2 Analytics-enabled prediction	3 Proactive support	4 Responsive, white-glove service
Zero-touch, digital self-service (app, web)	<p><b>[TELCO]</b> Subscription-style access at transparent, fixed monthly prices with easy-to-understand terms and self-selected in-app upgrades enabling zero-touch activations</p> <p><b>[BANKING]</b> Radically simplified fee structure, from many different transaction fees to a single monthly or annual charge</p>	<p><b>[BROADBAND]</b> Analytics predicts a potential service issue, triggering digital push notification informing customers how to avoid service interruption through easy-to-navigate self-care</p> <p><b>[ENERGY]</b> Customers offered cost savings if they opt in to demand control for their intelligent A/C units</p>	<p><b>[ENERGY]</b> Detected power-demand flatline confined to single household in street triggers SMS message suggesting fuse-box check</p> <p><b>[BANKING]</b> Easy-to-navigate monthly spending summaries, categorized by type (eg, groceries, apparel, hardware), frequency, and whether subscription-based</p>	<p><b>[BROADBAND]</b> QR code on modem box guides user through app-based self-installation guide, supported by data from previous installations at customer site</p> <p><b>[BANKING]</b> Self-guided activation for replacement cards</p>
Automated channel (Bots, interactive voice response (IVR), automated SMS)	<p><b>[MOBILE]</b> SMS informs customers at 50, 90, or 100% of data usage that speed will be throttled with no excess charges</p> <p><b>[ENERGY]</b> 'Read my own meter' capability with AI-assisted step-by-step guidance completes automated meter verification and bill estimate</p>	<p><b>[BROADBAND]</b> Detected speed issues resolved through remote modem software upgrade and reboot overnight</p> <p><b>[ENERGY]</b> Predicted power-usage spike sends push notification to high-demand households offering bill credit to decrease demand by 50% for next 6h</p>	<p><b>[BROADBAND]</b> Smart modem detects intermittent WiFi and triggers in-app message informing customers of fault and directs them to self-serve, or offers scheduled callback for guided resolution</p> <p><b>[BANKING]</b> Automatic notification of unusual transaction types (eg, new foreign payment)</p>	<p><b>[TELCO]</b> Bot or IVR checks for potential root causes for issues, eg, through line-ping or automated check of bill</p> <p><b>[ENERGY]</b> Service agent can see relevant demand patterns and the best offer for customer's unique circumstance</p>
Human-enabled channel (Contact center, field force, stores, back office)	<p><b>[ALL]</b> Radically simplified product and service portfolio that decreases time spent looking up information (eg, billing and sales inquiries)</p> <p><b>[ENERGY]</b> Smart meters equipped with remote diagnostic capabilities allow agents to identify faults without a field visit</p>	<p><b>[ALL]</b> Analytics system informs agents of most likely customer issue at the start of a call, and provides tools to guide them to a successful resolution</p> <p><b>[ENERGY]</b> Solar install at household triggers notification to others in neighborhood of the money "a neighbor saved" through solar and demand control, leading to follow-on local sales</p>	<p><b>[ENERGY]</b> Power outages in street or suburb trigger automatic notifications to all affected customers with clarity on timeline to resolve</p> <p><b>[MOBILE]</b> Actively contact customers before bill-shock events occur, and adjust down payments proactively early on</p>	<p><b>[ALL]</b> AI-assisted agent coaching, and enhanced user interface with predictive prompts, reduce call duration</p> <p><b>[ALL]</b> Advanced staffing models enable integrated workforce planning for centers, branches, and stores</p> <p><b>[ALL]</b> Customer operations become talent factories, with talent lifecycle approaches that drive in-moment coaching and learning</p>

field forces, and store employees, can instead impress customers with a focus on empathy, proactive outreach, and higher-quality responses to inbound queries, with richer information presented in a clearer way (Exhibit 2).

### **Take a whole-company approach**

Even highly successful initiatives can fail to capture their full potential if they are launched in isolation or without coordination—leading to higher costs or worse customer experience because of choices made elsewhere in the company. If a customer calls a contact center having failed to resolve an issue using digital self-service channels, for example, an agent asking them to repeat the same initial diagnostic steps is both wasteful and frustrating.

To avoid this trap, companies can design their service transformations with a whole-company view of improvement in experience and cost. Taking this true end-to-end view when planning, prioritizing, and sequencing initiatives can minimize leakage of customer issues from high-productivity self-help and automated channels to high-cost, manual alternatives.

For some issues, it can also eliminate the root causes altogether. Under a business unit–focused approach, the field force unit might create an automated customer callback that, before dispatching a truck, double-checks the address and hardware information entered in an online form. The solution might work most of the time—but at the risk of requiring a follow-up phone call to the customer should any disparities arise. By contrast, a company-wide approach would use AI at the point of ticket creation to validate

the address information against the customers' active services and the equipment that has already been installed, eliminating the need for double-checking and for extra manual work.

Successful end-to-end process improvement also requires companywide commitment to change, strong cross-functional collaboration, and transparent, lean governance that can steer transformations. The most advanced companies nominate a single senior executive as a sponsor, with both the authority to unblock decisions and the willingness to roll up their sleeves in working with a cross-functional, multiskilled delivery team.

One successful company brought together a team consisting of product experts, contact-center agents, technology experts, and field technicians. Working in an agile way, this team quickly got to the core of the most important process, transforming it by creating distinctive experiences at a radically lower cost. The sponsor played a combined role as captain, coach, and champion for the team, clearing roadblocks and accessing different parts of the company quickly instead of imposing a bureaucratic approval-gate model. This structure facilitated quick decision-making and helped to align different units and processes as change was implemented. Performance metrics and targets were set at the overall company level and cascaded through the BUs and teams to tightly measure progress during implementation.

---

Through this approach, telcos, banks, insurers, and other service-sector players can reduce service costs by 25 to 50 percent, while simultaneously enhancing customer experience.

**Varun Atre** is an associate partner in McKinsey's London office, **Julian Raabe** is a partner in the Munich office, **Tim Schenk** is an associate partner in the Melbourne office, and **Rohit Sood** is a senior partner in the Toronto office.

Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Beyond contactless operations: Human-centered customer experience

As we look forward to the next normal, consumers are already demonstrating a preference for companies that deliver great service while reducing risks all along the customer journey.

*by Melissa Dalrymple and Kevin Dolan*



© zoranm/Getty Images

**As the global fight** against COVID-19 continues and much of normal daily life remains on hold, organizations are trying to navigate a rapidly evolving landscape. Many have moved beyond initial actions to protect the lives and livelihoods of their people and are working to tackle the concerns of the estimated millions of consumers who expect the effects of COVID-19 to be long lasting—customers who are making decisions about whether or not to engage with a company based on its actions to address safety concerns and the way it communicates changes. Beyond addressing safety concerns, organizations that find ways to rebuild the human experiences that existed before COVID-19—among everyone from suppliers to employees and customers—within a contactless world will differentiate themselves and gain customer loyalty.

Companies are moving quickly to institute new policies and processes that will allow them to reopen—or in some cases, remain open. Many are investigating opportunities to shift toward contactless service and operations, allowing the cores of their businesses to continue operating while assuring both employees and customers of their safety. Companies that develop a long-term strategy now to mitigate risks while delivering distinctive and human-centric experiences

will emerge from the pandemic with stronger operational resilience, more agile organizations, and sustainable competitive advantage that can better respond to a changing economic context and any future shocks.

It will be important that companies work across silos to provide solutions that deliver effective, end-to-end employee and customer experiences, maintaining the value of their brands through the operational adjustments they make. A new, data-driven perspective, summarized as IDEA (*identify* interactions, *diagnose* and prioritize risks, develop and *execute* solutions, and *adapt* and sustain), can provide crucial structure and rigor in helping an organization see risks, assess their intensity, and create solutions to address them iteratively as the external environment evolves.

Leaders can then develop interventions and redesign critical customer and employee journeys, enabling their organizations to reopen or sustain operations while also building trust with both customers and employees, such as redesigning the way hotel guests check in by developing a completely digital experience without a check-in counter. Over time, IDEA can flex to include more human elements while keeping safety and security at its core.

Exhibit 1

**Four steps help businesses enable contactless operations from risk identification to solution execution.**



**Identify interactions**

Identify types of in-person interactions in your value chain within these three buckets:

- employee to employee
- employee to customer
- customer to customer



**Diagnose and prioritize risks**

Define risks associated with each interaction type, then prioritize risks based on factors such as intensity and frequency



**Develop and execute solutions**

Understand which types of interventions will be most effective for your business and begin executing solutions



**Adapt and sustain**

Work across the organization to continually adjust solutions to meet the needs of the evolving global situation

Source: McKinsey analysis

## **IDEA for managing risks**

Across all industries, levels of consumer concern for personal safety when interacting with a company are increasing. Across a wide range of countries, consumers have dramatically increased their use of low-touch service options, ranging from restaurant and grocery delivery to online fitness and telemedicine. And even once stay-at-home orders are lifted, customers are expected to continue to make careful selections about which businesses to engage with—even those that had long been central to their lives and livelihoods.

At the same time, although reassuring customers of safety will remain a baseline for customer retention, the impact will likely diminish as more businesses minimize personal contact in their operations. As the pandemic evolves, companies will likely be able to differentiate themselves further by finding ways to make contactless operations retain a sense of human connection. For example, one retailer is using augmented reality to let customers shop in a store, browsing products while interacting with store clerks.

Internally, organizations that take steps to protect their workforce and implement policies to limit and redesign in-person interactions—both employee to employee and employee to customer—can build crucial employee trust. Yet it's still possible to retain a human touch, often at little cost: a large restaurant chain's contactless delivery process can simply ask the delivery person dropping off the food to wait for the customer to collect it before leaving. The employee and customer have an in-person interaction and the reassurance that both are safe.

### **Identify interactions**

The first step in applying IDEA is to identify the interactions among employees and customers across the value chain that pose a risk. While in-person interactions were a central part of the day-to-day operations of many organizations, even minimal connections now pose a potential risk to the health of employees and customers. In Europe alone, some 54.8 million workers fall into high-risk occupations that require them both to work in close proximity to others and to have significant exposure

to the general public; they include roles in industries such as retail, leisure, and food services.

The three points of contact—employee to employee, as in handoffs of paper files or warehoused materials; employee to customer, as in a medical office or an in-home service visit; or customer to customer, as in a checkout line or boarding queue—all require detailed review. The physical environment, including the space allotted for the activity and the surfaces that people touch, also enter into the analysis. Even for the relatively short and self-contained customer journey involved in checking in at a hotel, the analysis reveals at least 15 potential interactions among customers and employees, from greeting at the front door to taking a pen to sign a credit-card charge to using the same buttons in an elevator.

### **Diagnose and prioritize risks**




Moving to the next normal and restarting operations will require adaptations to ensure that both employees and customers feel safe and reassured. Careful mapping of customer and employee journeys can help diagnose risks across all of the in-person interactions. Within the three in-person interactions, three types of transfers typically pose a risk: goods transfer, service provision, and internal tasks and processes (Exhibit 2).

The hotel example illustrates how organizations must understand risks from multiple journey perspectives. For the customer, handing over a credit card and receiving it back poses only a single risk; for the employee, who may handle dozens of credit cards over the course of a busy evening, the level of risk can look quite different. Once those risks have been diagnosed, managers can prioritize them according to business and regulatory context, as well as by effect on customer and employee experiences. That process will allow organizations to effectively allocate resources to the highest-priority risks and journeys, rating them according to intensity of exposure, duration of exposure, and frequency of contact.

### **Develop and execute solutions**

As the global economy moves through and beyond

## Mapping the customer and employee journeys helps identify the risks across interactions.

Interface scenarios	Example risks in each interaction type		
	Goods transfer	Services	Internal tasks/processes
<b>Employee to employee</b> 	In a distribution center, goods may be transferred from person to person (eg, from order picking to packing) and may involve close proximity and touching the same goods	2 field-service technicians may ride in the same truck to a customer site, which may involve touching the same surfaces and breathing the same air	An employee may go to the IT-support desk for help with a computer malfunction, and the 2 employees may stand in close proximity and touch the same devices
<b>Employee to customer</b> 	Purchasing a garden hose in a hardware store may involve a customer and an employee in close proximity and touching the same bags and cash	A field-service technician servicing a piece of equipment (eg, gas turbine, airplane) may come into contact with the customer to understand the problem and may share tools with other employees	A package-delivery employee may need to get a delivery-confirmation signature, requiring both employee and customer to touch the same scanner or tablet
<b>Customer to customer</b> 	2 customers may meet in person for a consumer-marketplace purchase, which may lead to close proximity and touching the same products	Multiple patients may share the waiting room of a doctor's office, which may lead to close proximity and touching of communal objects (eg, furniture, door handles, magazines)	Customers may use the same working surface to complete forms in a bank or to ship packages, which may lead to close proximity and touching the same surfaces and pens

Source: McKinsey analysis

the current crisis, companies can think iteratively about solutions to develop contactless operations. Success will rest on developing a through-line perspective across both customer and employee experience—how much, and what kind, of contact the customer wants to have and that the employee can safely give. The exercise is likely to bring together teams that are unused to collaborating with each other. It will require leaders to use a hands-on approach to facilitate and encourage collaboration between, say, a delivery-management team used to prioritizing speed and accuracy and a marketing-insights team focused on understanding customers' qualitative experiences. There will be little room for traditional siloed thinking in which each functional group focuses only on its own role; instead, the real value will come from better understanding how the functions affect one another and can change to support better end-to-end processes, such as

freeing up just enough time on delivery so that the customer and delivery person can acknowledge each other.

The risk assessment developed in IDEA's diagnose phase can help companies prioritize actions, balancing customer, employee, and business needs. Those risks that are identified as mission-critical can be addressed first, redesigning journeys and implementing people-, process-, and technology-based solutions in two main phases

- **Return:** creating safe experiences to reopen and address immediate needs. These are the must-haves to restart a business and reassure customers and employees that leaders are addressing the most serious risks through temporary or permanent actions that comply with regulatory or governmental

requirements. They will involve the redesign of both the customer experience and its supporting processes and will be communicated to both consumer and employee stakeholders to build confidence. For example, a grocery store limiting the maximum number of customers in its building will lower both frequency of contact and intensity of exposure for employees and customers. Similarly, telecom engineers confirming service through text messaging rather than in-person signatures will demonstrate how technology solutions can have the same effect as traditional practices while reducing (or even eliminating) the need for employee–customer contact.

- **Reimagine:** reorchestrating and accelerating initiatives to prepare for the long term and build distinctiveness. Reviewing operations through a COVID-19 lens will help prioritize ongoing and new initiatives. This focus can help companies consider which broader initiatives now underway they should accelerate and shape to match new requirements and which new initiatives they should begin.

Consider digitization efforts that can be accelerated to enhance safety efforts toward reduced contact by enabling omnichannel interactions. For example, a consumer bank is accelerating the consolidation of its physical-branch network to reallocate resources and serve customers more effectively through digital channels. That also has the effect of reducing in-person contact and potential exposure—but reduces the bank’s opportunity to connect with customers on a human level.

As companies shift to less risky operational models, they can seek out ways to engage their customers as people and maintain a high bar for customer experience. New initiatives may include broader process or policy redesign, or a redefinition of strategies and associated business-case development. Going beyond contactless, hotels are creating virtualized in-room experiences that allow guests to experience a property’s amenities and the surrounding areas—taking note of customers’ preferences to create customized welcome gifts so

that once travel resumes, hotel staff will be able to welcome and interact with guests in a more tailored way throughout their stays.

As postcrisis norms and regulations emerge, there will be new opportunities to build brand loyalty and create innovative customer and employee experiences. This effort will likely start with a reexamination of a company’s brand and corporate values against the emerging context, using that analysis to develop distinctive positioning that redefines loyalty programs or creates new custom offers. Companies can consider new collaboration models, policies, and protocols with ecosystem partners, adapting the examples from major airlines and hotels that have extended loyalty status and launched additional perks lasting beyond the current crisis.

As companies work through opportunities to develop and execute new solutions, a cocreation process involving all stakeholders can help reduce concern among employees and customers while improving the likelihood of success. The process can bring together cross-functional teams and stakeholders to review journeys and create solutions that minimize or remove risks. By doing so—and by bringing together central players, such as vendors, customers, and industry experts—organizations can synthesize the redesigned employee and customer journeys, ensuring that new solutions both address the risk and reassure all parties.

### **Adapt and sustain**

In the current fluid environment, employees across an organization can continually work to improve processes to ensure that their teams and customers are safe. In practice, doing so will translate to tangible actions across a few areas:

- **Learning and adjustment.** Companies will need to test and adjust solutions continually to the changing environment. To guide the adjustments, key performance indicators will need regular reassessment to ensure that the most important ones are being tracked—perhaps deemphasizing transaction speed in favor of new



metrics to reinforce physical distancing. Equally important, companies can measure the impact of changes that they make, learn from them, and adjust accordingly.

- **Management systems.** Improved management systems help ensure that a new operating model is sustainable. More frequent touchpoints—often digital to minimize burdens on managers—throughout an organization help leaders check progress, while the institution of cross-functional teams supports more effective root-cause problem solving and innovation.
- **Team accountability.** It is vital for everyone across the entire organization to share responsibility for continuous improvement and be expected to contribute. In the current environment, a part of that improvement is instilling a culture of well-being so that people feel secure as they adjust to new ways of living and working.
- **Contactless but human.** As operations shift to contactless to reduce risks to employees and customers, companies can reorchestrate the

customer journey to maintain a sense of human contact in their interactions with customers. Companies that can not only ensure that their operations are safe but also give customers a sense of greater connection will differentiate themselves in the next normal.

- **Employee engagement.** An operating model in which employees can ask questions and help improve on redesigned journeys can strengthen engagement—an especially critical task when they are also making many changes to the way they work. Transparent, frequent communication of efforts and adjustments with customers, vendors, and employees alike helps reinforce the message that employees are valued.

---

Companies that can move toward human-centered service operations that reduce risks and improve safety—without compromising on their employee and customer experiences—will have the opportunity to emerge stronger and with justified loyalty as we reimagine the world around us in the next normal.

**Melissa Dalrymple** is a partner and **Kevin Dolan** is a senior partner in McKinsey's Chicago office.

The authors wish to thank Sergio Gutiérrez, Nicolas Guzman, Adele Hu, Rodolfo Maciel, Daniel Orbach, Jim Pallotta, Ellen Scully, and Trevor Siu for their contributions to this article.

Designed by Global Editorial Services  
Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# An executive primer on artificial general intelligence

While human-like artificial general intelligence may not be imminent, substantial advances may be possible in the coming years. Executives can prepare by recognizing the early signs of progress.

*by Federico Berruti, Pieter Nel, and Rob Whiteman*



© Getty Images

**Headlines sounding the alarms** that artificial intelligence (AI) will lead humanity to a dystopian future seem to be everywhere. Prominent thought leaders, from Silicon Valley figures to legendary scientists, have warned that should AI evolve into artificial general intelligence (AGI)—AI that is as capable of learning intellectual tasks as humans are—civilization will be under serious threat.

Few seeing these warnings, stories, and images could be blamed for believing that the arrival of AGI is imminent. Little surprise, then, that so many media stories and business presentations about machine learning are accompanied by unsettling illustrations featuring humanoid robots.

Many of the most respected researchers and academics see things differently, however. They argue that we are decades away from realizing AGI, and some even predict that we won't see AGI in this century. With so much uncertainty, why should executives care about AGI today? The answer is that, while the timing of AGI is uncertain, the disruptive effects it could have on society cannot be understated.

Much has already been written about the likely impact of AI and the importance of carefully managing the transition to a more automated world. The purpose of this article is to provide an AGI primer to help executives understand the path to machines achieving human-level intelligence, indicators by which to measure progress, and actions the reader can take to begin preparations today.

### **How imminent is AGI?**

In predicting that AGI won't arrive until the year 2300, Rodney Brooks, an MIT roboticist and co-founder of iRobot, doesn't mince words: "It is a fraught time understanding the true promise and dangers of AI. Most of what we read in the headlines... is, I believe, completely off the mark."

Brooks is far from being a lone voice of dissent. Leading AI researchers such as Geoffrey Hinton and Demis Hassabis have stated that AGI is nowhere close to reality. In responding to one of Brooks' posts, Yann LeCun, a professor at the Courant Institute of Mathematical Sciences at New York

University (NYU), is much more direct: "It's hard to explain to non-specialists that AGI is not a 'thing', and that most venues that have AGI in their name deal in highly speculative and theoretical issues..."

Still, many academics and researchers maintain that there is at least a chance that human-level artificial intelligence could be achieved in the next decade. Richard Sutton, professor of computer science of the University of Alberta, stated in a 2017 talk: "Understanding human-level AI will be a profound scientific achievement (and economic boon) and may well happen by 2030 (25% chance), or by 2040 (50% chance)—or never (10% chance)."

What should executives take away from this debate? Even a small probability of achieving AGI in the next decade justifies paying attention to developments in the field, given the potentially dramatic inflection point that AGI could bring about in society. As LeCun explains: "There is a thin domain of research that, while having ambitious goals of making progress towards human-level intelligence, is also sufficiently grounded in science and engineering methodologies to bring real progress in technology. That's the sweet spot."

For business leaders, it is critical to identify those researchers who operate in this sweet spot. In this executive's guide to AGI, we aim to help readers make that assessment by reviewing the history of the field (see sidebar, "A brief history of AI"), the problems that must be solved before researchers can claim they are close to developing human-level artificial intelligence, and what executives should do given these insights.

### **What capabilities would turn AI into AGI?**

To understand the complexity of achieving true human-level intelligence, it is worthwhile to look at some the capabilities that true AGI will need to master.

*Sensory perception.* Whereas deep learning has

## A brief history of AI

The term “artificial intelligence” was coined by John McCarthy in the research proposal for a 1956 workshop at Dartmouth that would kick off humanity’s efforts on this topic. The AI topics that McCarthy outlined in the introduction included how to get a computer to use human language; how to arrange “neuron nets” (which had been invented in 1943) so that they can form concepts; how a machine can improve itself (that is, learn or evolve); how a machine could form abstractions by using its sensors to observe the world; and how to make computers think creatively. In essence, McCarthy was describing in 1956 what we now call AGI.

McCarthy was certainly not the first to talk about machines and “intelligence.” Alan Turing’s 1950 paper on “Computing machinery and intelligence” introduced the “imitation game,” a test of a machine’s ability to exhibit intelligent behavior, and which became known as the “Turing test.” Turing optimistically estimated that, in the year 2000, a computer with 128Mb of memory would have a 70 percent chance of fooling a person. In his earlier 1948 paper on “Intelligent machinery,” he describes what we today call computers, as well as a machine that fully imitates a person. He points out that our ability to build adequate sensors and actuators might not be sufficient for some time and that our efforts are best invested in the aspect of intelligence that relates to games and cryptography. The clear aspiration, however, has always been to achieve human-level intelligence.

The early work, like Turing suggested, revolved around subject areas that do not require too much sensing and action, such as those of games and language translation. Research communities

around computer vision, natural language understanding, and neural nets are, in many cases, several decades old.

Within these AI research communities, there has been substantial success and advancement in what the field now terms “narrow AI” applications. Narrow AI is the application of AI techniques to a specific and well-defined problem, such as chatbots that help customers resolve issues with their phone bills, algorithms that spot fraud in credit-card transactions, and natural-language-processing engines that quickly process thousands of legal documents. Applying narrow AI solutions in use cases across industries can generate tremendous economic benefits. Our colleagues’ research shows that the potential value of applying this sort of deep learning could range from \$3.5 trillion to \$5.8 trillion annually.

To differentiate themselves from researchers solving narrow AI problems, a few research teams have claimed an almost proprietary interest in producing human-level intelligence (or more) under the name “artificial general intelligence.” Some have adopted the term “super-intelligence” to describe AGI systems that by themselves could rapidly design even more capable systems, with those systems further evolving to develop capabilities that far exceed any possessed by humans.

MIT roboticist Rodney Brooks describes the four previous attempts at AGI, along with their approximate start dates, in discussions that provide important context for understanding their progress.

**Symbolic AI (1956).** The key concept is the use of symbols and the encoding of

knowledge of the world through relationships between these symbols. One familiar example is the knowledge that a German shepherd is a dog, which is a mammal; all mammals are warm-blooded; therefore, a German shepherd should be warm-blooded.

The limitation is that humans still provide the ground truth by encoding our knowledge of the world, rather than allowing an AI system to observe and encode these relationships itself. Symbolic AI was the dominant paradigm of AI research from the mid-1950s until the late 1980s. One ongoing effort to provide a solution to common-sense reasoning through symbolic AI is the Cyc Project, launched in 1984 to collect knowledge represented declaratively in the form of logical assertions, of which it had collected 25 million by 2017.

**Neural networks (1954, 1969, 1986, 2012).** Recent advances in speech recognition (now widely used in devices such as smart speakers), and in computer vision (such as limited self-driving abilities in cars) are all due to deep neural networks. The artificial neuron as a computational model of the “nerve net” of the brain was proposed as early as 1943.<sup>1</sup> In the decades since then, it has been through multiple highs and lows in its popularity as a tool for AI.

MIT’s Marvin Minsky and Seymour Papert put a damper on this research in their 1969 book “Perceptrons,” where they mathematically demonstrated that neural networks could only perform very basic tasks. They also discussed the difficulty of training multi-layer networks. In 1986, however, Geoffrey Hinton and some colleagues solved this problem with the publication of the back-prop-

<sup>1</sup>Warren McCulloch and Walter Pitts, “A logical calculus of the ideas immanent in nervous activity,” *Bulletin of Mathematical Biophysics*, volume 5, 1943.

agation algorithm. In the 1990's, work by Yann LeCun made major advances in neural networks' use in computer vision, and Jürgen Schmidhuber similarly advanced the application of recurrent neural networks as used in language processing.

In 2012, Hinton and two of his students highlighted the power of deep learning when they obtained significant results in the ImageNet competition. With the power of graphics processing units (GPUs), Hinton's back-prop algorithm could be applied to neural networks with substantially more layers, hence making them "deeper" and introducing the terms "deep neural networks" and "deep learning." This kicked off the past few years' focus on deep learning, almost to the exclusion of most other approaches.

**Traditional robotics (1968).** During the first few decades of AI, researchers also sought to build robots to advance research. Some robots were mobile, moving around on wheels, while others were fixed, with articulated arms. Robots used the earliest attempts at computer

vision to identify and navigate through their environments or to understand the geometry of objects and maneuver them, such as moving around blocks of various shapes and colors. Accordingly, although robots have been used in factories for decades, most rely on highly controlled environments with thoroughly scripted behaviors that they perform repeatedly. As valuable as that is, it has not contributed significantly to the advancement of AI itself.

One area where traditional robotics did have substantial impact is in the way robots build maps of their environment using only partial knowledge and observations, through a process called "simultaneous localization and mapping" (SLAM). SLAM algorithms became part of the basis for self-driving cars and are used in consumer products, from vacuum-cleaning robots to quadcopter drones. Today, this work has evolved into behavior-based robotics, commonly referred to as haptic technology, which provides a semblance of human touch, or physicality, to AI.

**Behavior-based robotics (1985).**

Insects navigate well in the real world with very few neurons. This observation inspired researchers to investigate how a robot could resolve conflicts when partial observation and knowledge of the physical world might provide conflicting commands to its actuators. A conflict-resolution mechanism needs to be heuristic in nature. As Brooks states, "Behavior-based systems work because the demands of physics on a body embedded in the world force the ultimate conflict resolution between behaviors, and the interactions."

The behavior-based approach starts out as reactive to how the world is changing. As a result, robots applying this approach are more robust in the real world, which is why the majority of deployed robots use it. Neural networks by themselves aren't capable of this level of adaptation. In each recent successful deployment, neural networks are embedded as part of symbolic AI systems or behavior-based systems.

enabled major advances in computer vision, AI systems are far away from developing human-like sensory-perception capabilities. For example, systems trained through deep learning still have poor color consistency: self-driving car systems have been fooled by small pieces of black tape or stickers on a red stop sign. For any human, the redness of the stop sign is still completely evident, but the deep learning-based system gets fooled into thinking the stop sign is something else. Current computer vision systems are also largely incapable of extracting depth and three-dimensional information from static images.

Humans can also determine the spatial characteristics of an environment from sound, even when listening to a monaural telephone channel. We can understand the background noise and form a mental picture of where someone is when speaking to them on the phone (on a sidewalk, with cars approaching in the background). AI systems are not yet able to replicate this distinctly human perception.

**Fine motor skills.** Any human can easily retrieve a set of keys from a pocket. Very few of us would let any of the robot manipulators or humanoid

hands we see do that task for us. Researchers in the field are working on this problem. A recent demonstration showed how reinforcement learning could teach a robot hand to solve a Rubik's cube. Although Claude Shannon built a robot to solve the cube decades ago, this demonstration illustrates the dexterity involved in programming robot fingers on a single hand to manipulate a complex object.

**Natural language understanding.** Humans record and transmit skills and knowledge through books, articles, blog posts, and, more recently, how-to videos. AI will need to be able to consume these sources of information with full comprehension. Humans write with an implicit assumption of the reader's general knowledge, and a vast amount of information is assumed and unsaid. If AI lacks this basis of common-sense knowledge, it will not be able to operate in the real world.

NYU professors Gary Marcus and Ernest Davis describe this requirement in more detail in their book "Rebooting AI," pointing out that this common-sense knowledge is important for even the most mundane tasks anyone would want AI systems to do. As Douglas Hofstadter notes, the fact that free machine-translation services have become fairly accurate through deep learning does not mean that AI is close to genuine reading comprehension, as it has no understanding of context over multiple sentences—something which even toddlers handle effortlessly. The various reports of AI passing entrance exams or doing well at eighth-grade science tests are a few examples of how a narrow AI solution can be easily confused for human-level intelligence.

**Problem solving.** In any general-purpose application, a robot (or an AI engine living in the cloud) will have to be able to diagnose problems, and then address them. A home robot would have to recognize that a light bulb is blown and either replace the bulb or notify a repair person. To carry out these tasks, the robot either needs some aspect of the common sense described above, or the ability to run simulations to determine possibilities, plausibility, and probabilities. Today, no known systems possess either such common sense, or such a general-purpose simulation capability.

**Navigation.** GPS, combined with capabilities such as simultaneous localization and mapping (SLAM), has made good progress in this field. Projecting actions through imagined physical spaces, however, is not far advanced when compared with the current capabilities of video games. Years of work are still required to make robust systems that can be used with no human priming. Current academic demonstrations have not come close to achieving this goal.

**Creativity.** Commenters fearing superintelligence theorize that once AI reaches human-level intelligence, it will rapidly improve itself through a bootstrapping process to reach levels of intelligence far exceeding those of any human. But in order to accomplish this self-improvement, AI systems will have to rewrite their own code. This level of introspection will require an AI system to understand the vast amounts of code that humans cobbled together, and identify novel methods for improving it. Machines have demonstrated the ability to draw pictures and compose music, but further advances are needed for human-level creativity.

**Social and emotional engagement.** For robots and AI to be successful in our world, humans must want to interact with them, and not fear them. The robot will need to understand humans, interpreting facial expressions or changes in tone that reveal underlying emotions. Certain limited applications are in use already, such as systems deployed in contact centers that can detect when customers sound angry or worried, and direct them to the right queue for help. But given humans' own difficulties interpreting emotions correctly, and the perception challenges discussed above, AI that is capable of empathy appears to be a distant prospect.

## Four ways to measure progress

Instead of still trying to use the Turing Test, Brooks suggests four simple ways to measure our progress toward human-level intelligence that are summarized here below. Similarly, numerous companies and research organizations are exploring alternative frameworks to measure progress based on granular human-equivalent

capabilities, requirements to perform certain human tasks, or the combination of capabilities to perform every human job.

#### **The object-recognition capabilities of a two-year-old**

In the first case, two-year-old children who are only used to sitting on white chairs will realize that they can also sit on black chairs, three-legged brown stools, or even on rocks or stacks of books.

#### **The language-understanding capabilities of a four-year-old**

Four-year-olds are typically able to converse and follow context and meaning over multiple exchanges with a decent understanding as to the subtleties of language. We don't need to start every sentence by first stating their names (unlike today's "smart" speakers), and they can understand when a conversation has ended, or the participants have changed. Children can understand singing, shouting, and whispering, and perform each of these activities. They even understand lying and humor.

#### **The manual dexterity of a six-year-old**

Most six-year-olds are able to dress themselves and can likely even tie their own shoes. They can perform complex tasks requiring manual dexterity using a variety of different materials, and can handle animals and even younger siblings.

#### **The social understanding of an eight-year-old**

Eight-year-olds can hold their own beliefs, desires, and intentions, explaining them to others and understanding when others explain theirs. They can infer other people's desires and intents from their actions and understand why they have those desires and intents. We don't explain our desires and intents to children because we expect them to understand what they are observing.

Although the AI community is active in research to address all these aspects, we are likely decades away from achieving some of them. In more narrow applications, it seems plausible that object recognition, language understanding, and manual dexterity can be mastered to a sufficient extent in the medium term to address specific use cases.

Very often in the literature, the concept of a robotic elder-care robot is used as a conceptual test case. With the advances we're seeing, it's certainly plausible that a simplified and useful domestic robot that can offer some assistance to an elderly person might be available within the next decade, even if controlled by a remote human pilot at the beginning.

### **What advances could hasten inflection points?**

The reduction in storage costs over the last two decades brought about the concept of "big data." The computing advances in GPUs uniquely enable an algorithm to be applied to much larger neural networks. With these neural networks trained on very large data sets, researchers accomplished all the recent advances brought about through deep learning. The combination of data, algorithms, and computing advances caused an inflection point. To look for the next AI inflection point, it is useful to consider the landscape again using those three component parts.

*Major algorithmic advances and new robotics approaches.* It may very well require completely new approaches to move us toward the level of intelligence displayed by a dog or a two-year-old human child. One example researchers are exploring is the concept of embodied cognition. Their hypothesis is that robots will need to learn from their environment through a multitude of senses, much like humans do in the early stages of life—and that they will have to experience the physical world through a body similar to that of humans in order to cognitively develop in the same way as humans do. With the physical world already designed around humans, there is merit in this approach. It prevents us from having to redesign so many of our physical interfaces—everything from doorknobs to staircases and elevator buttons. Certainly, as described in a previous section, if we are going to bond with smart robots, we are going to have to like them. And it is likely that such bonding is only going to happen if they look like us.

The entire advance in deep learning is enabled by the backpropagation algorithm, which allows

large and complex neural networks to learn from training data. Hinton, along with colleagues David Rumelhart and Ronald Williams, published “Learning representations by back-propagating errors” in 1986. It took another 26 years before an increase in computing power and the growth in “big data” enabled the use of that discovery at the scale seen today. Whereas a multitude of researchers have made improvements in the way backpropagation is used in deep learning, none of these improvements has been transformative in the same way. (Hinton’s more recent work on “capsule networks” may very well be one such algorithmic advance which could, among other applications, overcome the limitations of today’s neural networks in machine vision.)

Deep learning assumes a “blank slate” state, and that all “intelligence” can be learned from training data. Anyone who has ever observed a mammal being born would recognize that something like a fawn starts life with a level of built-in knowledge. It stands within 10 minutes, knows how to feed almost immediately, and walks within hours. As Marcus and Davis point out in *Rebooting AI*, “The real advance in AI, we believe, will start with an understanding of what kinds of knowledge and representations should be built in prior to learning, in order to bootstrap the rest.” The recent success of deep learning may have drawn away research attention from the more fundamental cognitive work required to make progress in AGI.

**Major computing advancements.** The application of GPUs to training deep neural networks was a critical step-change that made the major advances of the last several years possible. GPUs uniquely enabled the complex calculations required by Hinton’s backpropagation algorithm to be applied in parallel, thereby making it possible to train hugely complex neural nets within a finite time. Before any further exponential growth toward AGI can be expected, a similar inflection point in computing infrastructure would need to be matched with unique algorithmic advances.

Quantum computing is often touted as one of the potential computing advances that could change our society. But, as our colleagues recently noted in a research report, quantum computing is

proposed not as a replacement for today’s devices, but for highly complex statistical problems that current computing power cannot address. Moreover, the first real proof that quantum computers can handle these types of problems occurred only in late 2019, and only for a purely mathematical exercise with no real-world use at all. The hardware and software to handle problems such as those required for advancements in AI may not arrive until 2035 or later. Nonetheless, quantum computing remains one of the most likely possible inflection points and one to keep close tabs on.

**Substantial growth in data volume, and from new sources.** The rollout of 5G mobile infrastructure is one of the technology advances touted to bring about a significant increase in data due to the way the technology can enable growth in the internet of things (IoT). Research conducted by our colleagues has, nevertheless, noted roadblocks to 5G implementation, particularly in the economics for operators. Also, in a 2019 survey, operators reported that they did not see IoT as a core objective for 5G, because the existing IoT capability was likely sufficient for most use cases. As a result, 5G appears unlikely by itself to serve as a major inflection point for increasing data volume and as a subsequent enabler of training data. Most of the benefits may already have appeared.

New robotics approaches can yield new sources of training data. By placing human-like robots with even basic functions among humans—and doing so at scale—large sets of data that mimics our own senses can help close a training feedback loop that enhances the state of the art. Advanced self-driving cars are one such example: the data collected by cars already on the market are acting as a training set for future self-driving capability. Furthermore, much research is being done in human-robot interaction. By finding initial use cases for human-like robots, this research could greatly add to the training data necessary to expand their capabilities.

## What executives could do

What are the next steps for executives? The best way to counteract the hype about AGI is to take tangible actions to monitor developments and position your organization to respond appropriately



to real progress in the field. The following checklist offers categories of actions to consider.

- **Stay closely informed** about developments in AGI, especially with regard to the ways AGI could be advancing more rapidly than expected. To enable this, connect with start-ups and develop a framework for rating and tracking progress of AGI developments that are relevant to your business. Additionally, begin to consider the right governance, conditions, and boundaries for success within your business and communities.
- **Tailor environments** to enable narrow-AI advances now—don't wait for AGI to develop before acting. A number of steps can be taken today to adjust the landscape and increase uptake. These include simplifying processes, structuring physical spaces, and converting analog systems and unstructured data into digital systems and structured data. The digital and automation programs of today can smooth the transition to AGI for your customers, employees, and stakeholders.
- **Invest in combined human-machine interfaces** or “human in the loop” technologies that augment human intelligence rather than replace it. This category includes everything from analytics to improve human decision making to cognitive agents that work alongside call-center agents. Using technology to help people be more productive has been the engine of economic progress and will likely remain so for the foreseeable future.
- **Democratize technology** at your company, so progress is not bottlenecked by the capacity of your IT organization. This does not mean letting technology run wild. It means building technical capabilities outside of IT, selectively deploying platforms that require little or no coding skills, and designing governance models that encourage rather than stifle innovation.
- **Organize your workers** for new economies of scale and skill. The rigid organization structures and operating models of the past are poorly suited for a world where AI is advancing rapidly. Embrace the power of humans to work in complex environments and self-organize. For example, institute flow-to-the-work models that allow people to move seamlessly between initiatives and groups.
- **Place small bets** to preserve strategic options in areas of your business that are most exposed to AGI developments. For example, consider investments in technology firms pursuing ambitious AI research and development projects in your industry. It's impossible to know when (or if) your bets will pay off, but targeted investments today can help you hedge existential risks your business might face in the future.
- **Explore open innovation models** and platforming with other companies, governments, and academic institutions. Such arrangements are essential to test the art of the possible and the business nuances of AGI development. It's hard to keep up with the rapidly changing AGI landscape without firsthand experience working alongside leading organizations.

---

AGI may not be ready this decade or even this century—but some of the capabilities may start appearing in places you might not expect. The benefits will accrue most to those who are observant—and prepared.

**Federico Berruti** is a partner in McKinsey's Toronto office, **Pieter Nel** is an alumnus of the New York office, and **Rob Whiteman** is a partner in the Chicago office.

Operations Practice

# Operations management, reshaped by robotic automation

Today's automation shows huge promise for saving time, money, and human effort. For operations centers, is it now just a matter of "ready, set, automate"?

*by Ian Didion, Pablo Hernandez, Avani Kaushik, and Kobi Masri*



© Getty Images

**Few technologies** rival the latest advances in automation in their anticipated ability to enhance organizations' performance, regardless of industry. The potential adoption rate is stunning by any measure: the McKinsey Global Institute estimates that, using demonstrated technologies, more than 81 percent of predictable physical work, 69 percent of data processing, and 64 percent of data-collection activities could feasibly be automated.

These three categories describe much of the work handled in operations centers, which we define as organizations that manage equipment and services remotely, or that manage human forces in the field (field forces). Examples include telecom and electrical utility network-operations centers (NOCs), IT operations centers, remote resolution centers, contact and call centers, and dispatch centers.

Indeed, the early stages of automation have already begun. Our colleagues' late-2018 automation survey found that three-quarters of respondents had either embarked on an automation journey, or would do so in the coming year (exhibit). And in our recent studies supporting the introduction of automation technology to operations centers, we've witnessed first-hand the extent to which automation can transform the technological paradigm of front-office operations management.

### The automation journey

Robotic process automation (RPA) has been a particular focus of attention, having been widely adopted in organizational support functions—initially in shared-service centers (SSCs) that had taken much of the responsibility for many companies' HR, finance, procurement, and IT functions. These environments were ripe for the introduction of RPA because many processes were standardized; RPA could therefore be applied to reduce costs (which had been rising) and improve accuracy.

RPA technologies have significantly improved in recent years, providing the high levels of quality and stability required for sensitive, customer-related processes in operations centers. Following the successful implementation in SSCs, organizations started expanding the application of RPA to

operations centers in hopes of radically accelerating the automation of operational processes, while also cutting costs.

### What RPA offers operations centers

In most industries, operations centers have used traditional forms of automation for many years. But these came with serious limitations. For example, custom software managed interfaces with multiple backend systems, but these implementations took several years to complete, and were expensive and quite rigid.

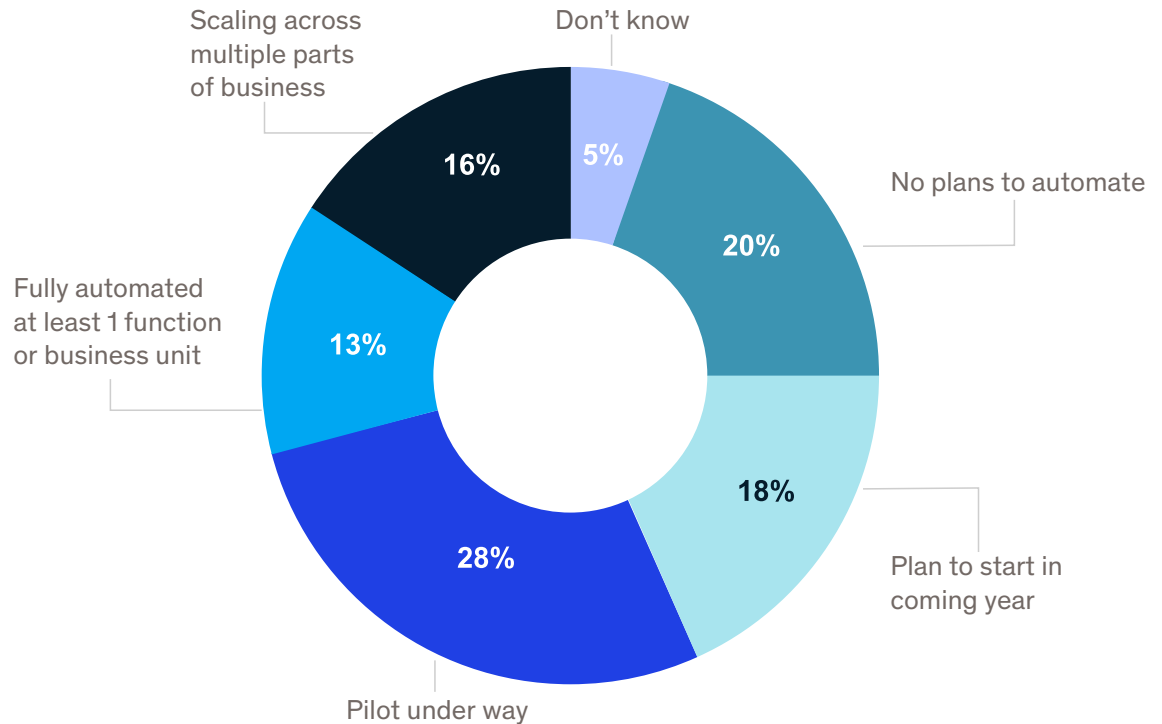
By contrast, new automation techniques, such as RPA and cognitive technologies, are having transformative impact. By automating manual and repetitive tasks, successful operations centers are reducing costs by 30 to 60 percent while increasing delivery quality.

We see three fundamental differences between RPA and traditional automation technologies:

1. **Accelerated implementation.** Like traditional automation techniques, RPA achieves high impact by both lowering costs and increasing the quality of manual tasks—but it does so much faster. Many of the improvements that may have required months, or even years, to achieve can be replicated with RPA technologies in a matter of weeks. This rapid timeline results from RPA's low barriers to entry and out-of-the-box controls. For example, a telco wholesaler used automation to reduce cycle times in one of its back-end processes by 99 percent. This automation solution took two developers just four days to implement.
2. **Low barriers to entry.** Traditional automation technologies require multiple technology stakeholders, developer teams, user-experience designers, and system instructors. In contrast, RPA can be overlaid on an existing IT infrastructure. It is developed by mirroring the user's inputs, while customization requires only a minimal programming background. Consequently, training RPA developers typically takes just two to four weeks, compared with more than

Exhibit

## Three-quarters of organizations say they are automating now or will be soon.



SOURCE: "The automation imperative," McKinsey & Company Operations, September 2018, McKinsey.com

a year for software engineers. An industrial-services company needed only about a month to train more than 20 remote-center engineers on RPA, combining a one-week training course with three weeks of teaming the trainees with experienced RPA developers.

3. **Enhanced control.** RPA applications come with out-of-the-box monitoring, reporting, and system controls in place. Standard RPA controls include scheduling customization, queue creation, email notifications, and response-triggered actions. The same level of controls and monitoring for software automation must often be developed from scratch.

### What's best to automate?

Although RPA's value proposition is attractive relative to traditional technologies, companies must stay focused on feasibility. Within operations centers,

there are a few common activities where we have seen RPA add significant value.

**Network monitoring.** By correlating network events, RPA can generate alarms for multiple standardized (pre-defined) issues.

**Remote troubleshooting and resolution.** RPA can support issue tracking, data gathering, ticket analysis, and remote reset. Intelligent incident-management systems can detect similar issues and resolve them—such as at a telco that uses RPA to improve its responses to network-equipment failures. The RPA bot executes steps according to a codified troubleshooting guide, leaving human agents to resolve only those issues not yet fully documented.

**Automated dispatching.** Companies can use automation to dispatch jobs from operations centers

to field agents, to handle exceptions in workforce allocation by load-balancing, and to optimize transportation routes for dispatched jobs. These steps help reduce time-to-resolution and increase the amount of time spent on judgment-based work.

**Self-help facilities.** For routine level-one and level-two requests, RPA can automate ticket logging, routing, and replies, which form the basis of self-help tools for customers. By minimizing the need for in-person call-center support, these solutions improve not only incident tracking, but also customer experience. Automatic analysis of customer call logs enabled one telco provider to reduce call-center agents' handle times by 10 percent for an entire family of service issues.

### **It's all about impact**

Successful RPA-led transformations have focused on capturing value by starting small, exploring select use cases, and scaling up over time. This methodical approach has yielded a wide range of performance improvements at operations centers.

- By automating performance-indicator monitoring and increasing remote-problem resolution, a large managed-services provider reduced its NOC and field-force costs by 20 to 30 percent.
- One large telco provider has automated 80 percent of its resource scheduling, resulting in a 10 percentage-point reduction in escalations and a 15 percent reduction in cycle time and field costs, while another telco used automation to reduce NOC operational costs by 55 percent.
- Automation helped a technical call center reduce its costs by more than 40 percent, while increasing quality of service.

### **What are the imperatives for success?**

For robotic automation to achieve its full potential across a business, organizations must proceed with care. The leaders' success stories all rested on a few critical factors, each requiring

substantial attention.

### **Re-skill your organization**

New skills will be essential to ensure smooth execution of the automated processes and create sustainable impact. Among the most critical are the identification, quantification, prioritization, and mapping of new processes that should be automated. Next, solution design, programming, and execution will all involve significant new capabilities, as will the monitoring and management of automation once it is in place.

### **Rethink business-IT collaboration**

When robotic-automation projects run into problems, a crucial reason is often misalignment between IT and business leaders—who will need a deeper level of cooperation than has historically been typical. Because business users understand the processes and are responsible for operations performance, they must identify which processes to automate, and should participate closely in RPA development. For its part, IT must contribute its advanced technical knowledge and experience in running production-level quality systems, and ensure end-to-end performance of the bots. Close collaboration is also required whenever there is a change in the application, so that bots can be updated appropriately.

### **Support the transformation with a CoE**

A center of excellence (CoE) is vital both as a source of expertise and to define priorities. This central team, with responsibilities cutting across operations and other functions, leads the organization's transformation, identifies opportunities for automation, and helps scale up current automation programs. The CoE's areas of expertise should include attended bots (for call centers), chat bots, advanced analytics, and cognitive agents.

The role of the CoE evolves over time. In the short term (usually the first six months), the CoE's diverse support responsibilities will include identifying the potential for automation; prioritizing opportunities; managing early proof-of-concept testing; codification of learnings; recruitment of CoE team members; training of business people; and oversight of existing transformations.

In the long term, the CoE's primary role evolves. Activities include managing the entire transformation from end to end (including prioritization of initiatives and funding), providing technical support for more complex issues, and establishing best practices. The CoE also supports initiatives of varying sizes across the company, seeds subject-matter experts and advocates where needed, and provides thorough coaching to team members. Additionally, the center can give light support to business-led initiatives.

In most situations, we have found it better not to have a separate CoE for operations, but instead to have a single automation CoE for the whole company. Such a CoE will not only be responsible for RPA, but will also serve as an interface with other parts of the organization involved in technologies such as advanced analytics, chat bots, and virtual agents.

The CoE's support should be guided by four main principles:

- *Establish an agile way of working* through cross-team collaboration and knowledge sharing. Agile automation follows the “scrum” method as its basic framework. Typically, each use case is addressed in “sprint” cycles lasting two to three weeks. A cycle starts with mapping user stories. It moves on to process analysis and developing a process map at the task level. The final step is technical design and development.
- *Drive standardization* by ensuring a consistent automation approach and reusability of components across different sprint teams.
- *Coordinate with IT* for automation delivery and execution.
- *Continuously introduce emerging technologies* beyond RPA. Because the technology landscape for automation is continuously evolving, organizations must

master complementary technologies to apply automation successfully. Beyond RPA, several additional automation technologies are already showing promise. For example, by combining RPA, cognitive agents, and artificial intelligence for image processing, a multinational recently reduced the cost base for one of its operations centers by more than half.

### **Focus on creating impact**

For a successful transformation, a company needs a comprehensive, end-to-end view of the automation opportunity. It should prioritize automation activities by business value, ease of implementation, and risk. Usually, prioritization is more effective when done within functional “domains” comprising 50 to 200 people rather than on a process-by-process basis—so, for example, for the HR domain as a whole rather than just for the employee-onboarding process. Typically, domains with high business value and high ease of implementation can be quick wins for automation.

In addition, leaders must think through how they will redesign the organization to take advantage of the capacity increases that usually result from successful automation. Moving people promptly to higher-value work helps multiply automation's impact—but the higher-value work must be identified and available for the people to do. That often means restructuring the organization at the same time that the automation solution is being designed and implemented, so that judgment-heavy tasks flow through to the right teams once the automation is in place.

---

It is time for companies to transform their operations centers using RPA and other automation technologies. Such a transformation needn't take long—and can generate tremendous value if done correctly.

**Ian Didion** is a senior digital analyst in McKinsey's New York office, where **Kobi Masri** is a consultant; **Pablo Hernandez** is a partner in the Madrid office; and **Avani Kaushik** is a digital expert in the Southern California office.

Marketing & Sales Practice

# Sales automation: The key to boosting revenue and reducing costs

Automation tailored to sales operations is a win for companies, customers, and sales reps. Here's how to make it work.

*by Manu Bangia, Gui Cruz, Isabel Huber, Philipp Landauer, and Varun Sunku*



© Getty Images

**Sales automation** holds the potential to reduce the cost of sales by freeing up time spent on administration and reporting and to unlock additional revenue by automating outreach to customers in the sales funnel. But many decision makers are not aware—or have not taken advantage—of the value that sales automation can create across a growing range of use cases.

To benefit from the emerging opportunity, sales organizations must adjust their ways of working as well as their technology platforms to ensure that sales reps and automation solutions work hand in hand. Early adopters of sales automation consistently report increases in customer-facing

time, higher customer satisfaction, efficiency improvements of 10 to 15 percent, and sales uplift potential of up to 10 percent.

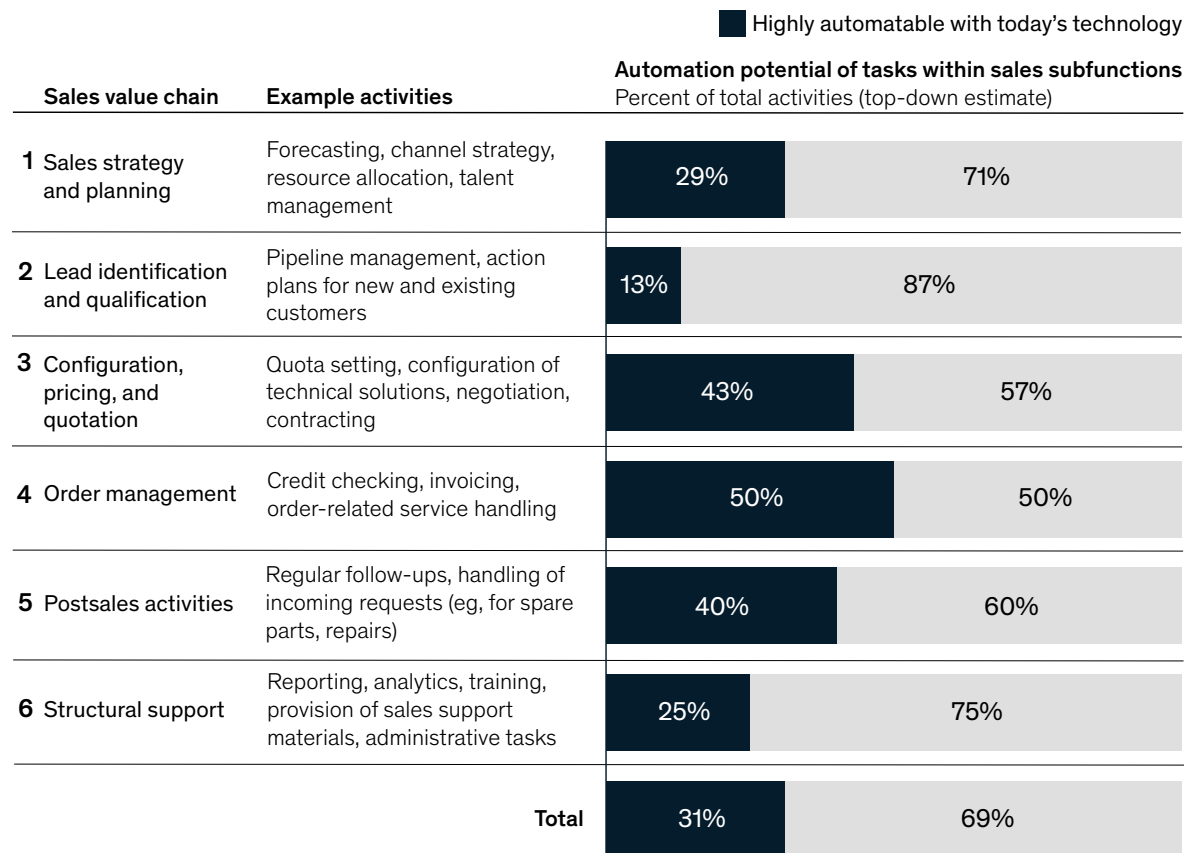
### About a third of all sales tasks can be automated

Automation of standard tasks is one of the megatrends that shapes the global economy. Cross-functional research by the McKinsey Global Institute (MGI) indicates that approximately a third of sales and sales operations tasks can be easily automated with today’s technology (Exhibit 1).<sup>1</sup> This makes sales one of the most promising functions in terms of automation potential.

<sup>1</sup>A directional figure based on a top-down assessment and interviews; the exact figure will depend on a company’s starting point and specific sales dynamic.

Exhibit 1

## More than 30% of sales-related activities can be automated.



Source: Vendor landscape review, expert interviews



Despite this considerable potential, only one in four companies has automated at least one sales process (Exhibit 2). From our conversations with top executives, we know that many sales executives are not yet aware of the breadth and depth of state-of-the-art automation applications across the entire spectrum of sales subtasks, nor of the value they can unlock.

Best-in-class companies, however, have started adopting automation as a key driver of cost efficiency and increased sales. For example, an advanced-industries company applied automation to streamlining its bid process, reducing proposal time from three weeks to two hours. Previously, all requests were handled by sales reps. “We used to do everything manually—assembling documents, looking up specifications, putting together the proposal,” a sales executive says. Now, predesigned

proposals are automatically populated with enterprise resource planning (ERP) data. A sales rep reviews the finished proposal and sends it to the customer.

This program has resulted in higher customer satisfaction and a 5 percent uplift in revenue. Other examples of the benefits of automation include an overall cost reduction of 10 to 15 percent and a reduction of order processing time—from confirmed order until confirmed delivery—from two or three days to one or two hours.

### Opportunities exist all along the sales value chain

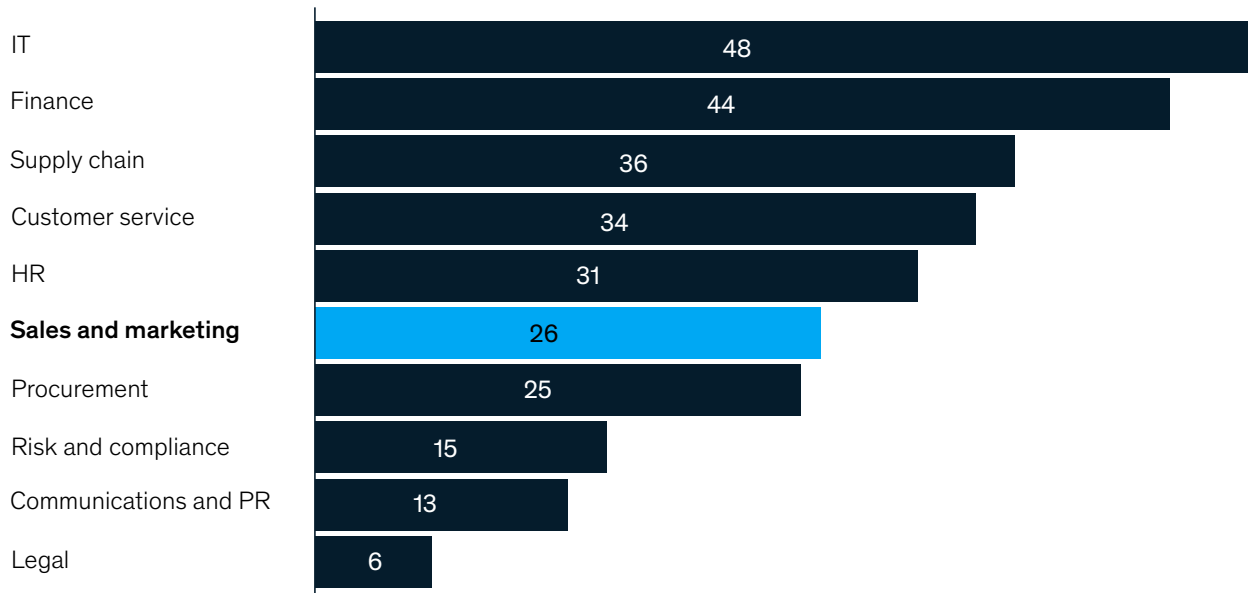
Companies seeking to drive up the automation rate of their sales function should start by sizing the total opportunity and identifying the

Exhibit 2

## Automation implementation in sales is lagging.

Which of the functions within your organization have already automated at least one business process?

% of respondents, N=764



Source: “The automation imperative,” McKinsey & Company, September 2018, McKinsey.com. The online survey was circulated from January 16–26, 2018, and garnered responses from 1,303 participants representing a full range of regions, industries, company sizes, functional specialties, and tenures. Of these respondents, 764 work at organizations that have piloted the automation of business processes or have fully automated them in at least one function or business unit. To adjust for differences in response rates, the data was weighted by the contribution of each respondent’s nation to global GDP.

## How we define sales automation

We define sales automation as any technology that is able to replicate human cognitive capability, such as logical reasoning, pattern recognition, and so on, thus reducing manual labor in a given sales process. While multiple technologies are available, we see five technologies as core to sales automation efforts: machine learning (ML), robotic process automation (RPA), natural-language processing/generation (NLP), smart workflows, and virtual agents.<sup>1</sup> Currently, machine learning and robotic process automation are the most popular technologies in sales, with adoption rates of 70 and 55 percent, respectively, among sales automation pioneers.<sup>2</sup>

<sup>1</sup> Federico Berruti, Graeme Nixon, Giambattista Taglioni, and Rob Whiteman, "Intelligent Process Automation," March 2017, McKinsey.com.

<sup>2</sup> Based on the comprehensive MGI definition of automation in "A future that works: Automation, employment, and productivity," January 2017, McKinsey Global Institute: "Our definition of automation includes robotics (machines that perform physical activities) and artificial intelligence (software algorithms that perform calculations and cognitive activities). Companies may adopt these technologies for reasons other than labor cost savings, such as improved quality, efficiency, or scale."

most promising use cases, based on a systematic review. Use cases exist all along the sales value chain (Exhibit 3).

Examples include:

- **Lead management.** Chatbots enable companies to re-engage prospective customers who are stuck in the purchasing funnel, thus creating new opportunities without any extra human effort. The bot independently selects customers, contacts them through text message or email, uses natural-language processing to understand the context of their response, and answers accordingly to drive conversion. This solution can increase sales reps' selling time by 15 to 20 percent, while increasing deal-flow transparency and conversion.
- **Churn prevention.** Scoring tools can create 360-degree customer profiles automatically, leveraging variables such as buying patterns, interaction preferences, and web data to identify customers with the highest propensity to churn. Compared to previous models based on simple analytics, machine learning triples the predictive power to identify churning.

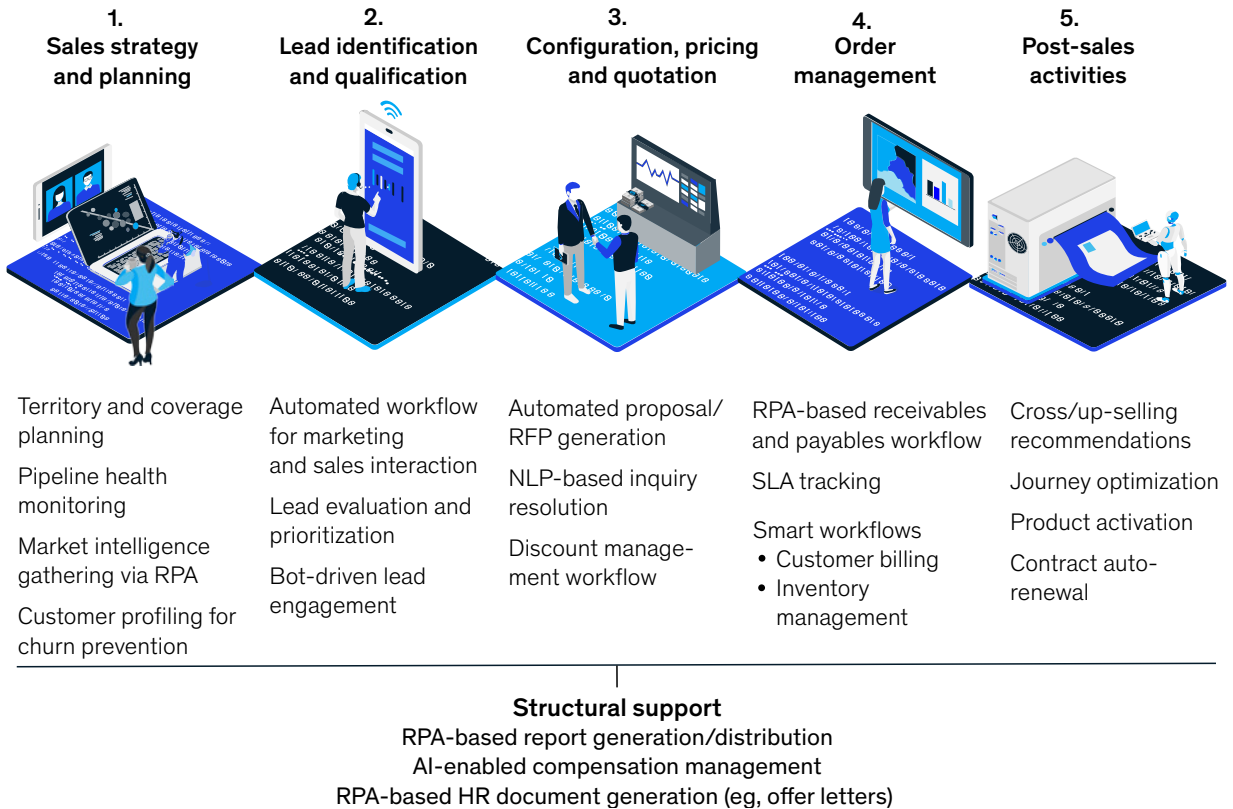
Based on the ML output, sales and marketing staff can take targeted actions to prevent churn, such as preconfigured price discounts to incentivize customers.

- **RFP generation.** Solutions based on natural-language processing/generation and robotic process automation can help reduce the time it takes to draft requests for proposals (RFPs) by up to two-thirds and eliminate human error. For example, one solution decodes the questions to be answered and proposes responses in a customized file that can be automatically sent to the prospective customer. This kind of solution has the potential to speed up RFP response time and efficiency while also improving internal version tracking and storage of relevant RFP content.
- **Post-sales customer journey optimization.** Robotic process automation and virtual agents can be used to reinvent the customer journey and create a seamless online process for ordering, tracking, and query management. For example, this approach helped a B2B supplier increase its customer-satisfaction score by 24 percentage points and improve throughput by about 20 percent.

Exhibit 3

**Automation can transform the entire sales value chain.**

Examples of the role of automation in sales



— **Product activation.** Bots can prepare license certificates for new customers and create emails that provide customers with license keys to activate their purchases. Bots verify that an order is valid and update internal functions, such as finance and legal, about the activation. The bot can save sales operations teams hundreds of hours per year and enable customers to activate their products much faster than before.

So will the sales function of the future be fully automated? Not likely. According to MGI research, not all jobs are fully automatable, and our experience in sales confirms this. In reality, the future of sales will be characterized by humans and

machines working together to provide optimal service to customers. Companies should think of automation not as a replacement of their sales force, but as a powerful tool that complements salespeople, rids them of low value-added tasks, and boosts their efficiency.

**How to deploy sales automation successfully**

To capture the benefits of sales automation, sales leaders must first recognize that, while anyone can deploy sales automation and capture its benefits, those with standardized sales processes in place and colocated/centralized

## Using the time gained from automation

According to McKinsey research, there is high correlation between the time sales reps spend with customers and sales productivity. On average, high-performing sales reps spend 20 to 25 percent more time with customers than lower-performing reps. Companies that standardize and automate non-customer-facing activities, such as administrative tasks, free up time for activities that directly drive performance, such as opportunity identification, negotiation preparation, and customer interaction.

sales support functions usually capture bigger benefits from automation and see impact faster than their peers. This is because their costs for data integration, technological deployment, and change management are lower.

Similarly, an extensible customer relationship management (CRM) system<sup>2</sup> and a consolidated IT stack usually help enhance the scalability of automation solutions. The leaner, more simplified, and more digitized the internal sales processes, the faster basic automation (RPA) can be deployed and more advanced solutions, such as machine learning and cognitive agents, can be implemented.

Finally, companies should select an implementation approach that reflects their starting point, the structure of the sales value chain, the competitive landscape, and customer preferences. In our experience, a full implementation journey typically takes 12 to 18 months, with impact from prioritized use cases within six months. It comprises three phases:

- **Phase 1: Quantify automation potential and prioritize opportunities.** A team of experts quantifies the automation potential by subtask and prioritizes use cases across the entire

sales function; best-in-class solutions can help complete this task in a few weeks.

- **Phase 2: Implement prioritized use cases.** This phase involves comprehensive process review and mapping in prioritized areas. It is typically conducted in three steps:
  - **Step 1:** Eliminate activities that don't add value from consideration
  - **Step 2:** Standardize processes with colocated sales support and consolidated data repositories
  - **Step 3:** Automate manual, time-consuming, and repetitive tasks.
- **Phase 3: Scale-up.** Companies should not seek to automate the entire sales function at once. Successful players take a wave approach, creating a pilot to test and refine new processes, starting with the most promising and least critical applications. Automation teams should work closely with sales reps and sales support staff to make sure their experience and expertise is reflected in the system, both to create buy-in and hedge against risks.

<sup>2</sup>In this context, "extensible" means "designed to allow the addition of new capabilities and functionality." For details, see Niklas Johansson and Anton Löfgren, "Designing for extensibility: An action research study of maximizing extensibility by means of design principles," May 29, 2009, University of Gothenburg Department of Applied Information Technology, gupea.ub.gu.se.

For automation programs to be effective, salespeople need to work differently. Change management involves training reps and managers; tracking impact via key performance indicators (KPIs), time saved, or the monetary value of bot-enabled customer conversion; putting in place appropriate incentives; and communicating with all relevant stakeholders. Best-in-class companies train sales reps both in workshops and in the field. As manual tasks are reduced, leaders can increase productivity targets and incentivize reps based on customer-oriented KPIs, such as revenue growth or acquisition rate. A periodic communication cadence should be established to engage and inform reps in “townhall” meetings. In our experience, change management is a crucial catalyst of success. In fact, 90 percent of companies that successfully scale automation invest more than half of their budgets in change management and capability building.<sup>3</sup>

The most effective model for delivering automation includes an automation center of excellence (COE) that provides enterprise-wide AI tools and expertise to guide the automation agenda. A sales-specific hub reporting to the head of sales or sales

operations, the COE drives the implementation of automation. It’s important to ensure that the teams driving sales automation consist of members with skills ranging from general management to technology and analytics, combined with relevant process domain and customer journey expertise.

One technology company used this approach to build a comprehensive ticketing system for assigning sales tasks automatically to either human sales reps or bots. Key central sales and sales operations functions were colocated with the automation team to improve efficiency.

The team explicitly developed a rollout program with sales reps to build their trust and capabilities as the effort proceeded, starting with noncritical processes (market intelligence gathering and pipeline monitoring enabled by RPA) and advancing to more critical processes (pricing recommendations supported by ML) in later waves. Use cases were prioritized based on ticket volume, length of the process, and potential impact.

---

<sup>3</sup> Michael Coyne, John Larson, Jessica Shieh, and Hyo Yeon, “Winning in automation requires a focus on humans,” December 2019, McKinsey.com.

## Sidebar

---

### **A day in the life of the sales rep of the future**

In the morning, the rep receives an automatic update on priority customers. In a conversation with a given customer, the rep uses automated proposal generators to respond to an RFP, with terms and conditions approved within minutes. Returning from the customer site, the rep scans the order, and the contract is uploaded into the system. Key stakeholders, such as manufacturing, finance, and customer service, receive copies of the order. As the order is shipped, the invoice is generated automatically and sent to the customer with the sales rep in cc. The customer and sales rep can check the order status online at any time. Automatic notifications are set up to alert the customer in case of unforeseen delays.

When the sales rep starts the videoconference with the next customer, a notification on critical talking points, such as the fact that the customer’s order profit margins are falling below a preset limit, is sent to the sales rep’s tablet.

All data was then integrated into a central ticket repository that served as the single source of truth. The ERP system was augmented with custom solutions that powered the bots. “Customers are amazed by the responsiveness. The bots resolve many issues in as little as two minutes,” a CRM manager says.

With automation, everybody wins. Customers will benefit from faster turnaround. Companies will benefit from higher sales-force productivity. And sales reps will experience greater job satisfaction because automation lets them focus on what they love: delivering value to customers.

**Manu Bangia** is an associate partner in McKinsey’s London office, **Gui Cruz** is an associate partner in the New York office, **Isabel Huber** is a partner in the Munich office, **Philipp Landauer** is a partner in the Stuttgart office, and **Varun Sunku** is a knowledge expert in the Marketing & Sales Practice in the Amsterdam office.

The authors wish to thank Pedro Assunção, Mathilde Castet, Michal Cieslikowski, Richelle Deveau, Wyszomir Janikowski, David Levitch, Ewelina Marcinkiewicz, Clemens Rengier, Siamak Sarvari, Cristiana Torres, and Rob Whiteman for their contributions to this article.

Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Making healthcare more affordable through scalable automation

As more healthcare companies start to implement automation technologies, the ability to coordinate across the organization in achieving scale will be a major determinant of success.

*by Brandon Carrus, Sameer Chowdhary, and Rob Whiteman*



© Getty Images

**Automation technologies**, such as robotic-process-automation bots, machine-learning algorithms, and physical robots, have the potential to reshape work for everyone: from miners to commercial bankers, and from welders to fashion designers—and even CEOs.

Our colleagues' research on the future of work estimates that, using currently demonstrated technologies, almost half of the activities that people are now paid to do in the global economy could feasibly be automated. Certain types of repetitive and routine activities, such as data collection and processing, thus show a high automation potential. By contrast, certain tasks that are customer-facing or that involve innately human

skills—such as creativity, problem-solving, and effective people management and development—are more resistant to automation (Exhibit 1).

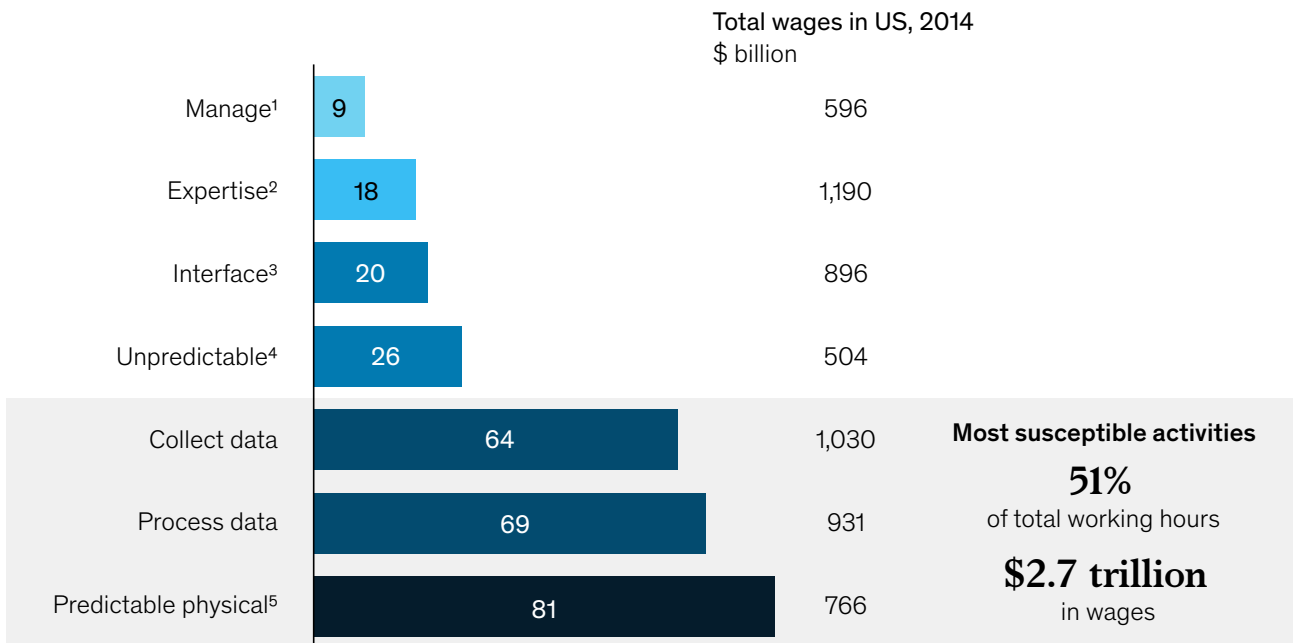
Partly because of task-level differences in automation potential, sectors' automation potential varies widely, ranging from 26 percent in educational services to 60 percent in manufacturing. Healthcare is bifurcated between payers and providers. Payer work, reflected in Exhibit 2 as part of "finance and insurance," is fairly automatable: about 43 percent of tasks show technical automation potential, as activity such as administering claims or enrolling members primarily involves collecting and processing data in a controlled environment.

Exhibit 1

**Three categories of work activities have significantly higher technical automation potential.**

**Time spent on activities that can be automated by adapting currently demonstrated technology**

%



<sup>1</sup>Managing and developing people.

<sup>2</sup>Applying expertise to decision making, planning, and creative tasks.

<sup>3</sup>Interfacing with stakeholders.

<sup>4</sup>Performing physical activities and operating machinery in unpredictable environments.

<sup>5</sup>Performing physical activities and operating machinery in predictable environments.

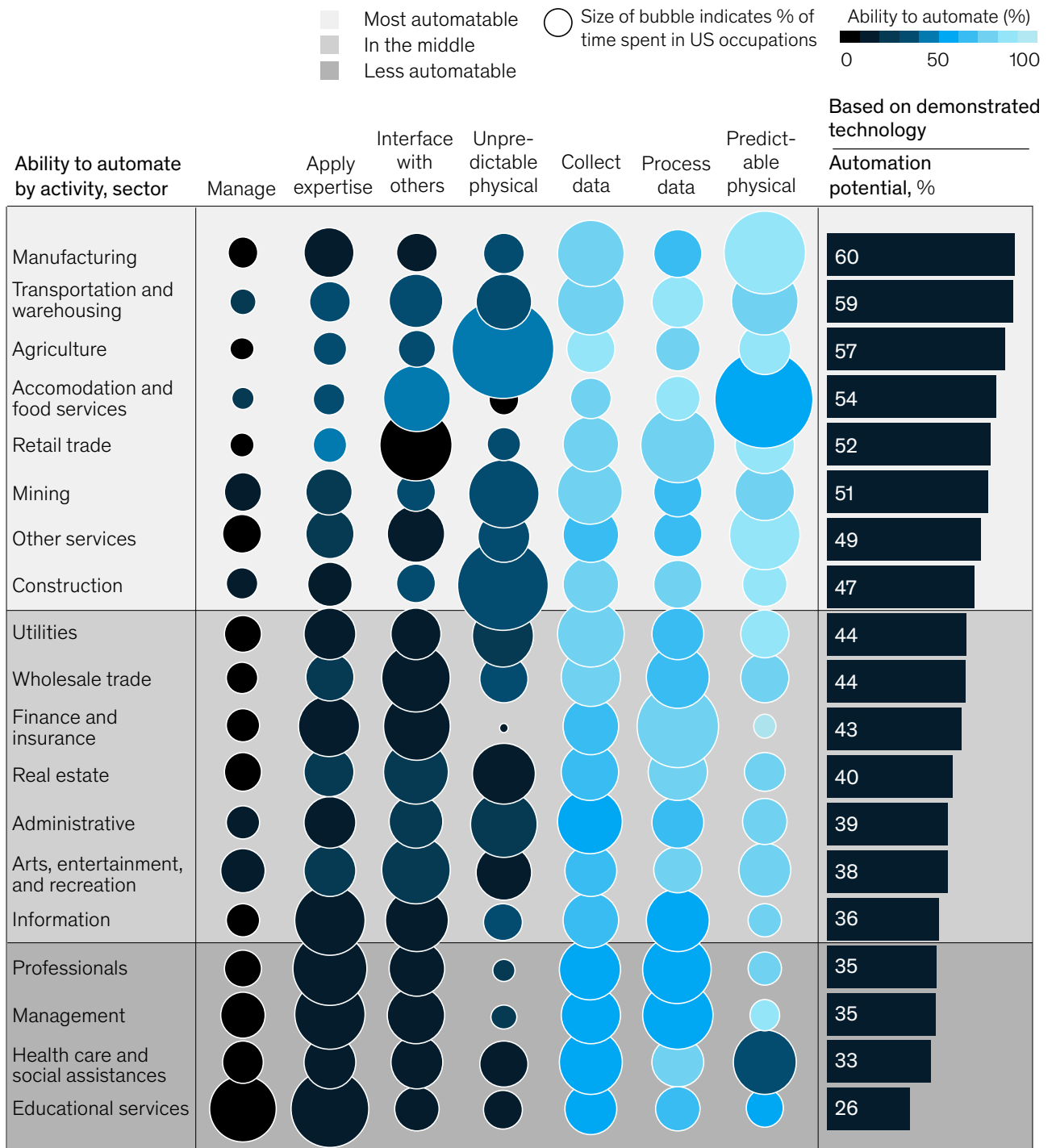
NOTE: Numbers may not sum due to rounding.

Source: US Bureau of Labor Statistics; McKinsey Global Institute analysis



Exhibit 2

The impact of automation will vary by sector and type of work.



Provider work is somewhat less automatable because its activities occur primarily in a clinical setting, such as patient consultation and surgical procedures. Still, an estimated 33 percent of the tasks in this area are likely to be automatable. The net result is that if automation's full potential were achieved, it could have a significant impact on reducing costs and improving affordability of healthcare.

The healthcare industry is in the middle of a multidecade shift attributable to multiple forces, including technology, national and state regulatory changes, and consumer-centric trends. Automation has the potential to reshape the industry, but many players are only beginning to capitalize on the opportunity. The success of these efforts is dependent on the ability to scale and coordinate automation activities across the enterprise.

### Automation stands to transform payers

Automation represents an estimated \$150 billion opportunity<sup>1</sup> for operational improvement, including reduction in administrative cost, improvement in quality control, and strengthened insights to achieve strategic objectives. Payers appear to have the most to gain from automation programs in healthcare, given the large portion of their work that is based on collecting and processing data.

The importance of automation was frequently cited in a recent survey that our colleagues conducted, which found that 85 percent of the 25 largest US payers ranked automation among the highest administrative cost-reduction levers (Exhibit 3). While 72 percent of respondents agreed that claims processing is the single

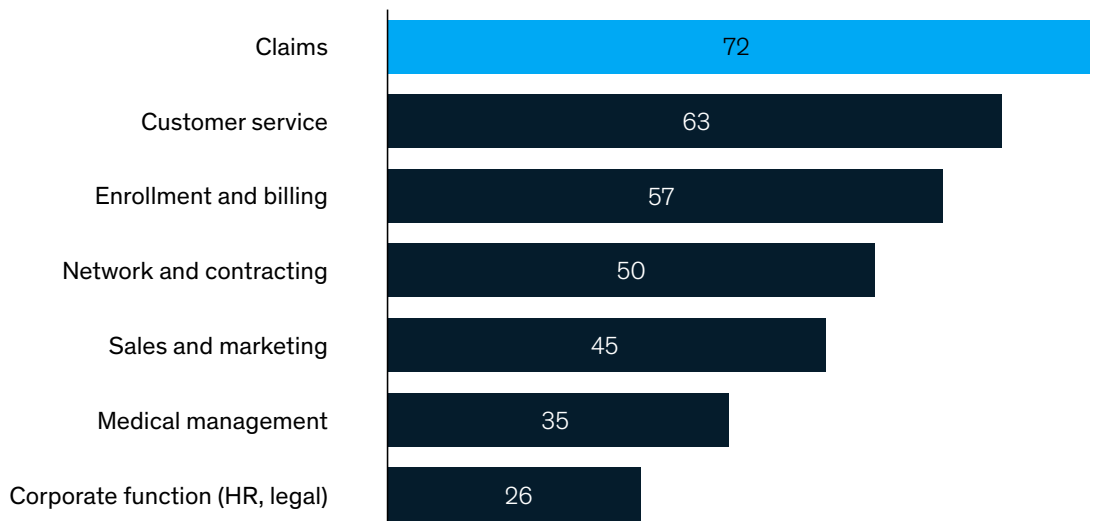
<sup>1</sup>Based on total healthcare spending in the US \$3 trillion, out of which approximately 15 percent is administrative cost, of which 40 percent could be automated.

Exhibit 3

### Automation can yield significant impact for payers—starting with claims.

#### Survey of healthcare payers (n=500), %

Where could automation yield its greatest cost impact for your organization?



area where automation could create the greatest impact, the survey confirmed that opportunities are available throughout the payer value chain, and across a broad range of automation technologies. Example areas of potential success include improving data quality through auto-validation algorithms, strengthening customer-agent relationships using portals and smart workflows, and simplifying the enrollment and onboarding process using bots.

Moreover, automation can deliver benefits beyond cost savings. Enhanced customer experience and satisfaction, improved data to drive decision-making, and improvements to organizational health can all help support long-term sustainability.

### Three success factors for automation

Our research finds that while most payers have launched automation efforts, many are struggling to build capabilities and generate bottom-line impact. According to a recent survey from our colleagues, each of the largest 25 healthcare payers in the US have started an automation program—but only half are beginning to scale. Pitfalls include lack of implementation expertise, lack of proper governance, and lack of funding. For example, at one healthcare company, a lack of coordination across business units meant that after spending more than \$25 million on automation, the company has seen less than \$5 million in realized annual benefits.

Our experience shows that across industries, successful automation programs do a few things differently:

- **Take a top-down, strategic approach.** While many companies begin by deploying technologies in a bottom-up way, often involving many “proof of concepts” in a thousand-flowers-bloom approach, successful organizations make automation a strategic initiative. That means doing the up-front work to understand the size of the opportunity, thoughtfully evaluating where to invest resources (is the opportunity greater in enrollment or billing?), and assessing what new capabilities may be required. By creating a roadmap early, successful companies better deploy financial and human capabilities in a systematic way across the enterprise.
- **Focus on people to capture value.** Focusing more on technology itself rather than the people charged with using it can lead to wasted potential, such as when companies undertake only passive reinvestment of the extra capacity automation generates. For example, automating a portion of a person’s workload without rethinking the role that person fills can leave that person only partly occupied, reducing the value automation could have produced. Successful companies instead are methodical in assessing which types of work are to be automated, which organizational structures and roles could be redesigned to fill gaps in people’s capacity and capture full value, and how to sustain the impact over time. They further strengthen this focus by incorporating it into targets and individual performance evaluations to increase accountability.
- **Design a deployment model to support scale.** Deploying automation technologies using a centralized, “factory” model can be a good way to build early capabilities. However, companies often find that this type of broad and shallow deployment model can sputter after capturing the easy opportunities. Successful organizations create structures capable of deploying multiple technologies in sequence—such as digitizing member forms, orchestrating workflows, and then launching bots and algorithms—across specific domains, whether processes, functions, or locations. Often, this means using cross-functional labs or pods that fundamentally redesign work in an area before moving on to the next part of the business. In effect, many organizations start with a centralized model but shift to a federated model in order to scale.

The healthcare sector, and particularly payers, stands to gain meaningfully from automation technologies. To capture the opportunity, companies will want to be more thoughtful and organized around orchestrating and scaling automation programs.

This will require strengthening buy-in across the organization, creating a scalable deployment model, establishing a repeatable process for converting activity into impact, and finding innovative ways to reskill and redeploy employees.

**Brandon Carrus** is a senior partner in McKinsey's Cleveland office, **Sameer Chowdhary** is a partner in the Dallas office, and **Rob Whiteman** is a partner in the Chicago office.

The authors wish to thank Kseniya Demchenko, Avani Kaushik, and Fedor Volkov for their contributions to this article.

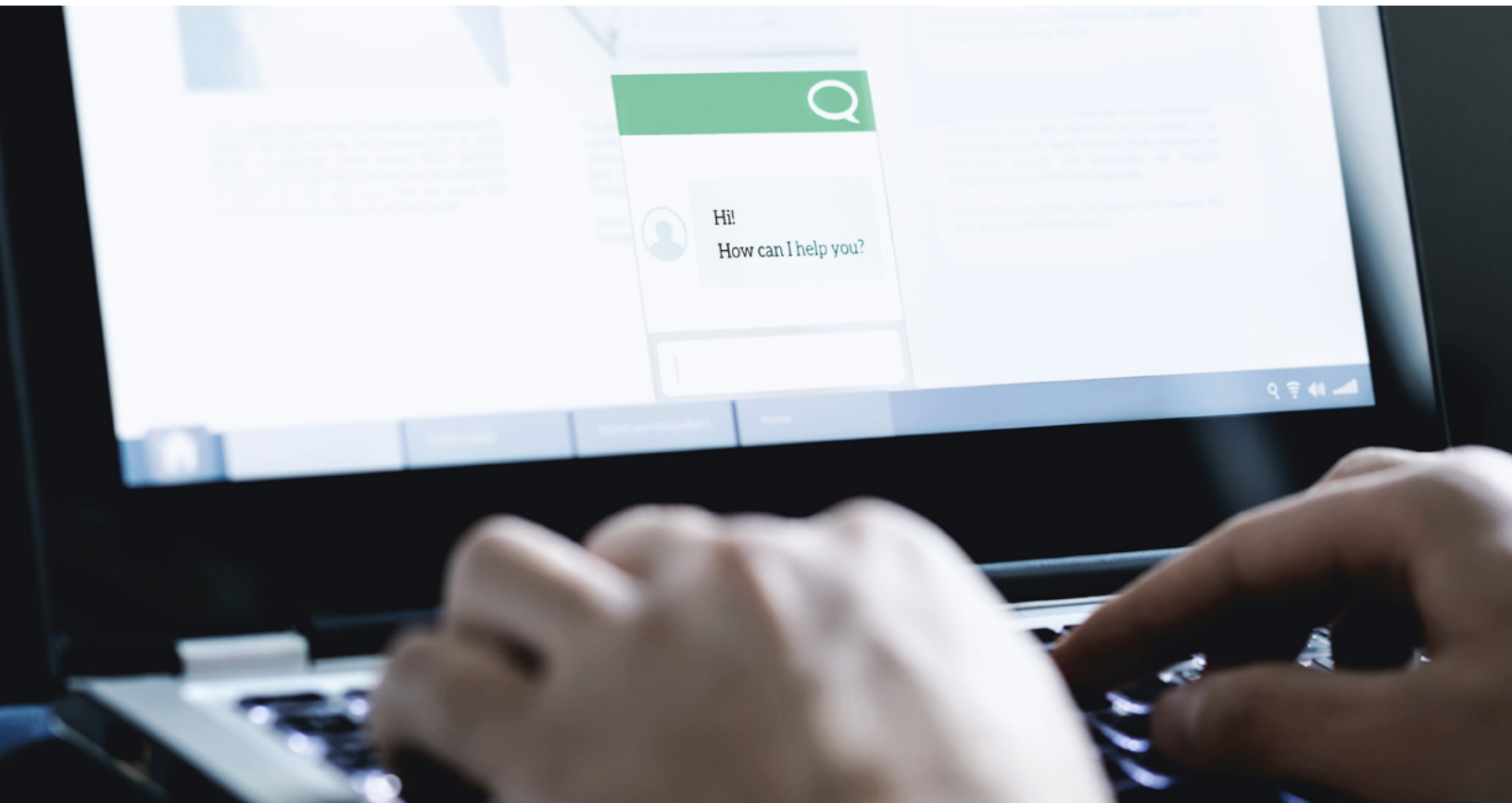
Copyright © 2020 McKinsey & Company. All rights reserved.

Public & Social Sector Practice

# Automation in government: Harnessing technology to transform customer experience

Automation can enable governments to provide outstanding levels of customer experience, driven by innovations that are as sensitive to people as they are to technology.

*by Matthias Daub, Tony D'Emidio, Zaana Howard, and Seckin Ungur*



© Tero Vesalainen/Getty Images

**Who knew that one could develop** warm feelings for a German Federal Employment Agency chatbot? If you own a business and wish to apply for state funds to supplement your employees' reduced salaries, then UDO will fill in the application form for you. "Let's go!" the digital assistant declares, launching into a series of questions. The system displays reassuring expertise; the queries—about the size of your workforce, the extent of the reduction in working hours, and so on—are simple, clear, and sensitive to previous responses, and the interface offers soothing blue tones and rounded edges. UDO goes on to ask why the workers are on reduced hours: for economic reasons, such as the cancellation of a large order due to the coronavirus, or because of an unavoidable event, such as a measure to mitigate the spread of the pandemic? And by now, a powerful and comforting thought may well arise in the citizen's mind: *UDO really cares.*

In this article, we argue that smart use of automation can enable governments to provide outstanding levels of customer experience, driven by innovations that are as sensitive to people as they are to technology. We begin by considering the challenges and rewards of enhancing customer experience for governments. Then we discuss the benefits to governments of using automation to improve customer experience. Finally, we turn from *why* to *how*, identifying three key practices common to successful automation initiatives in public services.

## **Public services customer experience: Challenges and opportunities**

Government leaders face major challenges as they work to improve their customer services. They must compete for talent despite budgetary constraints. Their data might be stored in isolated silos, even though citizens now expect an integrated offering. And they are expected to maintain resilience amid the growing complexity of citizens' needs, including aging populations that put increasing strain on health and social services.

Given challenges like this, it is no surprise that there is space to improve the customer experience provided by government. Across a range of countries, McKinsey has found that public services users rate them on average at 5.5 to six out of a maximum ten points. By contrast, the industries that best satisfy their clients enjoy an average score of about eight out of ten. These include supermarkets in Canada, Mexico, and the United Kingdom; e-commerce sites in France and Germany; credit-card providers in the United States; and pharmacies and supermarkets in Australia (Exhibit 1).<sup>1</sup>

Yet public-sector leaders globally are recognizing that outstanding customer experience has become an imperative. It is driven by the need for governments to maintain the trust of their citizens—trust that has been eroding in many countries. It is also motivated by citizens' everyday expectations,

# **Smart use of automation can enable governments to provide outstanding levels of customer experience, driven by innovations that are as sensitive to people as they are to technology.**

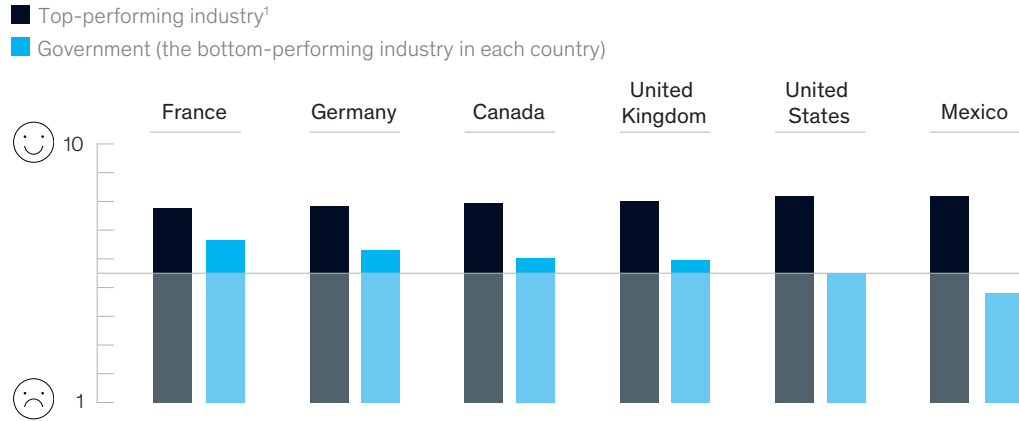
---

<sup>1</sup> Australians' appreciation for pharmacies, which they score at 7.7 for CSAT, emerges from McKinsey's Australian Customer Satisfaction Survey 2019. The survey examined about 5,000 customers' experiences with 32 federal and state government services, as well as private-sector services.

Exhibit 1

## Most governments underperform in customer satisfaction.

Customer-satisfaction score on a scale from 1 (very dissatisfied) to 10 (very satisfied)



<sup>1</sup>Top-performing industry in Canada, Mexico, and the United Kingdom = supermarkets; in France and Germany = e-commerce sites; and in the United States = credit-card providers.  
Source: 2018 Public Sector Journey Benchmark Survey

which are shaped by the offerings of leading firms. And it is impelled by the intricate and urgent needs of entire populations in crisis. Take a recent demand on the German Federal Employment Agency. In the two-month period of March and April 2020, in the midst of the COVID-19 crisis, the agency processed short-term allowances for employees of more than 788,000 firms—over 385 times more than the same period in 2019. Given the severity of the crisis, it was crucial to provide services not only at scale but also of excellent quality.

By strengthening their services to provide outstanding customer experience, governments can generate several benefits (Exhibit 2). The main one is increased trust: on average, across a range of nations, satisfied citizens are nine times as likely to trust governments, and nine times more likely to believe governments are achieving their mission. This is a stark advantage in turbulent times. In addition, satisfied citizens are far less inclined to return for follow-up appointments, having received

the service they require the first time, so a well-run system processes fewer unnecessary visits. By contrast, dissatisfied citizens are not only more likely to return with their unresolved problems but also to complain publicly or take legal action. Finally, quick and effective assistance, free of needless bureaucratic processes, can boost the morale of government employees, which in turn reinforces the quality of service they provide.

### How automation can help to transform customer experience

Leading organizations across industries are already turning to automation to improve customer experience. For instance, more than nine out of ten companies with world-leading brand recognition and high levels of customer satisfaction use artificial-intelligence (AI) solutions to raise customer satisfaction, compared to the average of four out of ten companies.<sup>2</sup>

<sup>2</sup> *Getting to iconic: How world-leading brands balance talent and technology for CX excellence*, MIT Technology Review briefing paper, August 2017, [technologyreview.com](https://www.technologyreview.com).

Exhibit 2

**Improving customer experience can drive better critical outcomes for government agencies around the world.**



Source: Global results from Canada, France, Germany, Mexico, United Kingdom, and United States, Public Sector Journey Benchmark Survey, 2018

How can successful automation improve the public services customer experience in particular? We have identified three kinds of benefits. Perhaps the most obvious of these advantages is that of reliability and simplicity. It is crucial for public services to minimize inaccuracy and other mistakes, given the fundamental impact of these services on citizens' lives. Well-designed automated services are unimpeded by human frailties, like the fatigue or distraction that causes people to enter data incorrectly or make calculation errors. It is also important for services to avoid needlessly extensive efforts on the part of customers, as citizens have limited time and energy to engage with government. By offering lucidly devised engagement processes, automation can support simple service delivery.

The Australian Tax Office (ATO) offers an example of automation-driven reliability and simplicity that has helped to build outstanding customer experience. ATO is a leading agency with respect to orienting around customer satisfaction. In a qualitative survey,

citizens strongly approved of the ATO's highly automated tax-return process, and rated it among the best Australian federal government services on CSAT score.<sup>3</sup>

Before automation, tax forms were complex and arduous; many Australians had to work through a tax agent, rather than tackle the process themselves. By contrast, the automated system features many benefits. Data provided to the ATO are used to prefill annual tax returns, so citizens won't have to locate and reenter information available elsewhere. Errors are reduced by means of "nearest neighbor" techniques: figures entered by citizens are automatically checked against those of people in similar circumstances, and users are prompted to review anomalous entries. The ATO's tax returns can now take just a few minutes to complete.

The ATO also applies automation to customer feedback. Call-center volumes are automatically monitored, allowing for rational allocation of

<sup>3</sup> Unpublished McKinsey Public Sector Journey Benchmark Survey for Australia, 2019. On a customer satisfaction scale of one (least satisfied) to 10 (most satisfied), Australians awarded an average rating of 7.4 for lodging a tax return. The highest score for other Australian Government journeys was 8.0.



resources based on informed forecasts of future traffic. Inbound calls are transcribed using speech-recognition software and then automatically reviewed for emerging trends, allowing the ATO to identify potential problems in its services, and also to provide call-center staff with the latest information to deal with trending customer queries, ensuring that citizens enjoy reliable service, receiving adequate and accurate information.

The ATO had already automated its tax returns before the COVID-19 crisis. But the pandemic has given further impetus to public services globally. Given the global surge in welfare applications unleashed by the COVID-19 crisis, unemployment-related services provide one highly topical domain of opportunities to enhance service using automation. The German Federal Employment Agency, an innovative body with a policy of continuously expanding its online offerings, has in recent months eased the way for citizens to register themselves as unemployed. Until the crisis, registration required in-person visits to the agency. But because of pressure on the agency from a wave of new applicants, desire to limit physical encounters, and lower availability of civil servants to staff offices during the crisis, the agency has instituted an innovative “Selfie-Ident” program. Applicants may download an app that guides them to record a video of themselves, and to make images of their identity document. This allows citizens to register with the agency as unemployed without an in-person visit. Here customer experience has been enhanced precisely by not requiring citizens to make an arduous and inconvenient in-person visit, but rather to enjoy a remote application as a far-simpler convenience.

A second way in which automation can boost customer experience in government services is by enabling civil servants to offer more complex and caring service provision. Because citizens’ expectations are rising, and populations are aging, public services increasingly require skilled people to perform tasks that call on a broad knowledge

of processes and an empathic attitude to citizens. Given budgetary constraints and the difficulty of expanding the workforce, automation can be of great help by relieving employees from repetitive tasks and allowing them to support nonautomatable areas. Civil servants can personally help citizens navigate through intricate processes and systems effectively and efficiently, resolve complex cases, or make decisions on difficult applications. In addition, they can take the time to connect with citizens seeking emotional engagement, such as an unemployed person hoping for a conversation that includes not only formal service but also some encouragement. In short, automation may enable governments to deploy greater numbers of client-facing staff who can provide high-value, dedicated service to citizens who need it.

More extensive attention to citizens requiring special attention may improve not only customer experience but also the experience of civil servants themselves. This, in turn, can strengthen government workers’ commitment to serving members of the public.

Indeed, if governments encourage their employees to take on roles that tap into the full range of human capacities, the result could be a significant uptick in motivation. The chance to help citizens directly, using one’s institutional and procedural knowledge to improve their lives, is what inspires talented people to join public service. Bob McDonald, former secretary of the US Department of Veterans Affairs, makes the point powerfully: “When it comes to attracting talent and fostering passion in your workforce, I think that ‘mission’ is the one thing the public sector has as an advantage over the private sector.”

There is considerable potential for a transformation in the roles of civil servants. In the Australian Public Service, for instance, about 40 percent of employee time is dedicated to collecting or processing data.<sup>4</sup> Automation can absorb many of these tasks, such as linking customer information to internal or external databases, allowing civil servants to migrate to more valuable roles in public service. Of course,

---

<sup>4</sup> *Our public service, our future: Independent review of the Australian Public Service*, Australian Government, Department of the Prime Minister and Cabinet, 2019, [pmc.gov.au](https://pmc.gov.au)

such changes in role will require reskilling for many civil servants—and automation could be a spur for governments to think through and actively shape the future of work in their organizations.

A third enhancement to customer experience that automation of government services can offer is **personalized service delivery, including AI-enabled service**. Here we have in mind two striking features of automation: the ability to simulate aspects of human engagement, and the capacity to perform tasks that are *beyond* the ability of any human, enabling a service to be customized to individuals. UDO, the German Federal Employment Agency chatbot, displays the former feature, being designed in such a way that it offers a calm, friendly, and reassuring experience. AI offers the latter feature, providing pattern recognition in data sets that are too large, complex, and dynamic for humans to detect an underlying order. Firms like Amazon and Netflix leverage this capacity to make recommendations for individual customers, based on patterns in their databases of customer interactions.

Similarly, governments can use AI to suggest services to individual citizens. For example, a disabled citizen interacting with government may receive particular service recommendations that they would likely find valuable, based on patterns in preexisting data for citizens with similar disabilities, family support, histories, and other factors. In short, AI allows public-service automation to propose services that are sensitive to a citizen's personal circumstances. This can work in powerful combination with the other aspect of personalization offered by automation: engagement that reflects human warmth and empathy.

Automation can provide a powerful boost to customer experience of public services—but is a global crisis really a good occasion to take a potentially dramatic step? We would suggest that leaders who are weighing the viability and desirability of automation may find that the pandemic is a window period during which profound change has become possible: some entrenched practices

have been loosening their grip, and people globally are more prepared to reevaluate their attitudes.

## How to automate successfully: Journey, satisfaction, and change

There is no single way to automate; rather, governments considering the automation of public services can choose from a suite of technological options. In **robotic process automation**, routine tasks—such as data extraction and data cleaning—are done by machine. Smart workflows integrate tasks performed by humans and machines, such as month-end processes. **Optical character recognition** converts handwritten, typed, or printed characters into machine-encoded text.

In **machine learning**, algorithms are employed to learn from experience, without explicitly being programmed with a set of rules. **Natural language processing** involves the automated analysis of text and speech to derive useful interpretations. And **cognitive agents** serve as a virtual workforce to support workplace tasks.

How can governments achieve their aim of adopting such technologies in ways that bring sustained outstanding customer experience, without generating issues that impede the success of a project? Leaders of successful automation projects recognize that automation requires changing existing systems and processes, while at the same time retraining and redeploying employees for new tasks. The complexity of implementing such changes is often underestimated. Decision makers who steer effective public services automation projects are smart program managers, ensuring—for instance—that they communicate their vision and progress, and get the most from digital talent. In our experience, successful leaders of automation projects also devote attention to these three areas:

- They view automation from the perspective of the end-to-end customer journey. Seeing the journey through a holistic lens allows automation to be properly integrated through an approach we call automation experience design

(AXD), which combines human-centered design and automation.

- They focus automation efforts on three drivers that matter most to customers: simplicity, reliability, and consistency. When resources are constrained—a familiar condition in public service—targeting these drivers realizes the greatest return on investment.
- They invest deeply in change management from the outset. Automation can cause substantial disruption across all parts of an organization and requires careful and considered support for employees and clients throughout the process.

### **Designing for end-to-end customer journeys**

A customer journey consists of a series of steps to complete a given task, including the channels and touchpoints with which users interact and their needs and questions at each stage. For most organizations, mapping these journeys through interviews with customers and analysis can be eye-opening—and for governments, it is especially important. Citizens do not differentiate between different parts of the same government agency, or across distinct government agencies: from their perspective, it is all one experience. Deploying isolated automation interventions without stepping back and understanding the end-to-end journey is unlikely to improve the overall customer experience much. Adopting an AXD approach starts with understanding customer needs, and mapping the journey across touchpoints and channels, including business processes and technologies. McKinsey has recently described a complementary approach, in which civil servants collaborate with citizens in “agile labs” to reimagine service journeys.

This all-embracing attention to the user journey can be seen in an initiative by Australian Unity, a company that offers health, wealth, and living services to more than one million Australians. Australian Unity aimed to improve customer and employee experience, reduce manual labor, and enhance data accuracy. They combined human-centered design and automation technologies to develop customer-

centric journeys. The company made an up-front redesign of its processes to determine the greatest opportunities for improvement.

One such opportunity was the creation of accurate customer records. With many customers across diverse services, each record created significant amounts of personal and financial information that required review from skilled employees. For eight months, robotic-process automation handled 42,000 transactions, eliminating 22,493 hours of manual work, and reducing processing time on average from 30 minutes to four minutes, without errors. By automating where the greatest benefit would lie, Australian Unity created capacity for six employees to be redirected to higher-value work, serving customers and designing improved customer experiences. The company’s detailed focus sparked various benefits that a less detailed attention to the user journey might not have revealed.

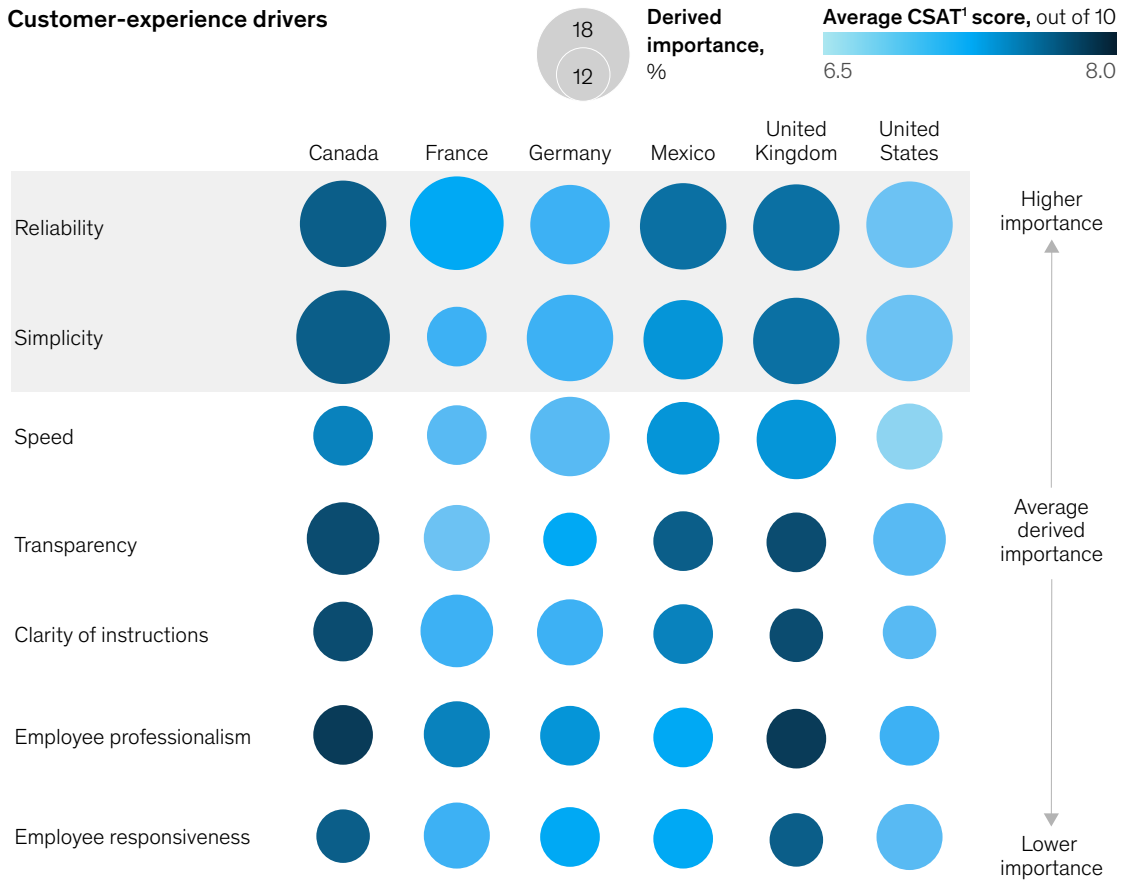
### **Understanding the underlying drivers of satisfaction**

While there are many drivers of customer experience, McKinsey’s global surveys reveal that customers care most about simplicity, reliability, and consistency when they employ the services of government (Exhibit 3). Consistency involves employing the same standards and approach across channels and services—for instance, where all government services accept the same payment methods. Simplicity is the ability to understand how to complete the service without the need for external support, such as legal advice. Reliability amounts to trustworthy performance across a range of conditions.

Any efforts to improve customer experience should first focus on these areas for maximum impact. Attention to these underlying drivers helps governments establish priorities. There is little value in automating processes and redirecting staff to areas that have a weak impact on overall customer experience. By contrast, it may be well worth automating for the sake of simplicity, reliability, and consistency.

Exhibit 3

**In almost every country, reliability and simplicity—not speed—are the top two drivers of customer experience.**



The Department of Welfare in Trelleborg Municipality, Sweden, offers a case of focusing on the drivers of satisfaction when automating critical welfare-support decisions. The department’s mission is to ensure openness, respect, and responsibility to help Swedish citizens regain self-sufficiency.

By means of a series of measures over the past decade, the department has made extensive changes in its management of welfare-payment

applications. Prior to these measures, it took an average of eight to 20 days for the department to make payment decisions. In the interim, citizens would continuously contact the department to inquire about their application status or to ask for help. The department identified this as an opportunity to improve customer experience and decided to use machine learning to support Trelleborg employees’ decision-making process. After this implementation, the period for welfare-

# McKinsey's global surveys reveal that customers care most about simplicity, reliability, and consistency when they employ the services of government.

support decisions went down to just 24 hours. Through additional capacity, employees could provide higher-value services, helping 22 percent more people than the previous year to find jobs, and to support their efforts at becoming self-sufficient.

In the case of Trelleborg Municipality, we can see the power of a focus on *simplicity*, radically driving down the time needed to make welfare-support decisions so that employees could focus on higher-value services for citizens. The municipality's automation-assisted decisions were also *consistent*, using machine learning to treat citizens' varied circumstances coherently. And the automated new services worked *reliably*, allowing important decisions to be made in a trustworthy way.

While simplicity, consistency, and reliability are the key drivers of customer satisfaction, successful public services aim to glean further insights by establishing comprehensive views of customers' responses, among other indicators of service quality.<sup>5</sup> On the most granular scale, operational KPIs and indicators help to track the processes that drive a customer journey, such as the time taken for an individual step in the process. At a higher level, journey level metrics involve customer feedback, including satisfaction scores, at the level of the end-to-end journey. Beyond an individual journey, experience drivers measure the broad elements of customer experiences, at a higher level than an

individual journey: how satisfied are customers with the public service more generally, and how do they perceive its brand? And at the highest scale, outcome metrics assess the outcomes that the public service ultimately aims to drive, such as an increase in applications processed in a single visit and higher public trust.

Such metrics call for a range of methodologies, from customer surveys to automated measurements, in which AI is increasingly featured. As these methods continue to develop, one fundamental feature remains: the metrics serve to measure what matters in order to turn these insights into action.

## **Taking change management seriously**

Achieving sustained benefits from automation requires change-management discipline. During the planning stages, governments need to identify which employees, processes, and citizens will be affected, and collaborate with line managers to support stakeholders from inception, not merely after implementation. As a public project moves ahead, leaders can produce highly informed change-management practices by keeping an eye on what we call the five Cs of public-service transformation: committed leadership, clear purpose and priorities, cadence and coordination in delivery, compelling communication, and capability for change.

---

<sup>5</sup> McKinsey Customer-Experience Measurement, July 2020, McKinsey.com.

In many instances, we have seen more than half the budget for new automation and AI initiatives being spent on change management, a sign of the seriousness with which leaders regard this function. Employees can perceive the full value of automation when it is preceded by extensive change management.

As a system forges ahead, it is vital to consider the consequences for everyone who interacts with it, including the experience of all its users. Thus, when Australia's Medicare stopped accepting cash, it also noted the fact that Australians had been slow to provide bank-account information for payment purposes and anticipated that some citizens would be unable or unwilling to receive direct payments into their accounts. The organization therefore announced special arrangements for such citizens, who could have funds transferred to an account of a family member or friend. For example, Medicare was

prepared to provide citizens with checks, or mail them to nominated friends or family.

---

Automation can be a powerful tool to improve the efficiency and quality of customer engagement, free up civil servants to solve citizens' problems and add value to their lives, and ultimately strengthen public trust in government. And as the pioneers of public-service automation are showing, public institutions are capable of building cutting-edge automated offerings that provide customer experience comparable to that of lean start-ups or leading private-sector corporations. Those automated offerings embrace technology not for its own sake, but to meet the growing expectations of citizens for reliable, simple, and personalized service from their governments.

**Matthias Daub** is a senior partner in McKinsey's Berlin office; **Tony D'Emidio** is a partner in the Washington, DC, office; **Zaana Howard** is a senior expert in the Melbourne office; and **Seckin Ungur** is an associate partner in the Sydney office.

The authors wish to thank Pascal Bornet, Jenny Child, Katharina Stange, and Thomas Weber for their contributions to this article.

Designed by McKinsey Global Publishing  
Copyright © 2020 McKinsey & Company. All rights reserved.

The background features a series of thin, light blue lines that originate from the left side and curve downwards and to the right, creating a sense of motion and depth. The lines are spaced closely together, forming a fan-like shape that tapers towards the right.

# Part 3: Delivering the impact

Operations Practice

# Lean management or agile? The right answer may be both

Through thoughtful design, agile and lean management can be the perfect match for companies in search of lasting performance improvement.

*by Stefan de Raedemaeker, Christopher Handscomb, Sören Jautelat, Miguel Rodriguez, and Lucas Wienke*



© Getty Images



**Has there even been a time** when customers were more demanding of the companies serving them? Industry 4.0 technologies—many barely imaginable only a decade ago—have already enabled genuine breakthroughs in cost, convenience, and customization, creating extraordinary value for buyers while raising the performance bar for producers ever higher.

And then there's the volatility that never entirely disappears, flaring up in crises that can upend everything from supplier relationships to entire business models—all prevalent in today's current landscape as COVID-19 creates widespread disruption. It complicates leaders' efforts to make lasting changes in their organizations—efforts that historically have required years of sustained effort to take root.

Institutions ranging from aerospace manufacturers to tax authorities have nevertheless persisted, focusing their efforts on lean management and agile. Both methodologies have proven their worth as integrated systems for helping improve performance.

The mistake we find many leaders and organizations making is believing they need to choose between the two. In fact, that's not true. Not only is choosing unnecessary, but the two methodologies complement one another in ways that increase the impact they generate, often by deploying Industry 4.0 technologies to speed transformation. Under this best-of-both approach, top-performing companies combine tools, ways of working, and organizational elements from each to form a custom solution that meets the company's unique needs more completely and quickly than has been possible.

### **Lean's legacy, agile's momentum**

Lean management has helped organizations create value for over 70 years. Starting in the 1940s with its roots in the Toyota Production System, lean management has spread from manufacturing to service operations and just about every other department and function at companies, governments, and non-governmental institutions around the world. Lean organizations seek to identify

and eliminate activity that is not valued by the customer or end user. This systematic analysis of processes and value streams to reduce waste, variability, and inflexibility boosts performance in cost control, product quality, customer satisfaction, and employee engagement—often simultaneously. Moreover, these companies apply a mindset of continuous improvement and flexible working processes in which all employees contribute new ideas and suggestions, so that the organization becomes better over time. Freed from non-value-generating tasks, people focus more on what matters to customers.

Agile is more recent, originating in software development in the 1990s accelerating after the release of the Agile Manifesto in 2001. Over the past decade, agile has rapidly expanded into other industries, such as telecommunications and banking—and, more recently, heavy industries such as mining and oil and gas.

Rather than the traditional process of developing a new product or service—which used to be highly sequential and time-consuming—agile is much quicker and more flexible. Agile models call for iterative development that aims to get an early prototype of a new product or service out into customers' hands as quickly as possible. Teams then capture feedback and iterate via quick cycles, refining the product or service over time. Agile approaches have since expanded beyond the realm of product development, and companies are increasingly organizing for agility across all their activities.

### **Better together**

A common misconception is that lean management and agile are mutually exclusive, based on fundamentally different principles and approaches and applicable for very different types of activities. Lean management is for routine, repeatable operations, this thinking goes, while agile only applies to projects or creative tasks. Therefore organizations, departments or functions need to pick one and focus on it exclusively.

However, that argument reflects a fundamental misunderstanding of both lean management and agile. In reality, both systems have been successful across a range of environments, and both share a similar set of foundational objectives: to deliver value efficiently for a customer; discover better ways of working to continuously learn and improve; transparently connect strategy and goals to give teams meaningful purpose; and enable people to contribute and lead to their fullest potential (Exhibit 1).

These objectives apply to any team or activity across an organization. There are, however, different ways of achieving them. Both lean management and agile provide team models, ways of working, and toolkits that can be deployed in any way that makes the most sense for an organization (Exhibit 2). The fact that

the two systems build on the same foundational beliefs makes their elements highly complementary. Moreover, operational excellence often cannot be achieved through lean management or agile exclusively but rather through the combination of both systems, using associated toolkits.

#### **Connect talent and unlock value**

Team models are organizational constructs that bring together individuals in an operating model to deliver value. Lean management introduces team models such as work cells, in which teams work together to complete steps that previously happened separately and were vulnerable to delay. Meanwhile, agile relies on concepts such as cross-functional teams and flow-to-work pools, which follow the same underlying philosophy. Some

Exhibit 1

### **Lean management and agile share a set of foundational objectives.**

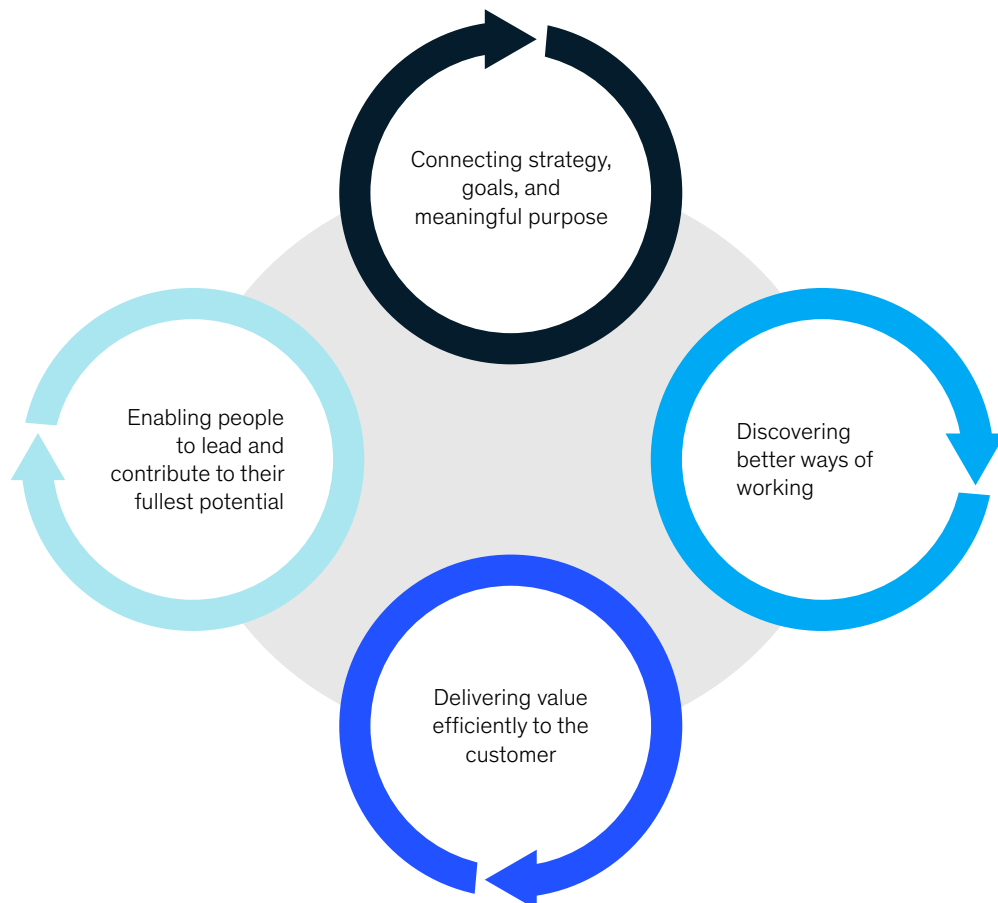


Exhibit 2

**Agile and lean ways of working build on a common mindset.**

Level	Lean management	Agile	
Team models	<ul style="list-style-type: none"> <li>• Work cells</li> <li>• Expert choreography</li> <li>• Segregating variability</li> <li>• Relationship service cells</li> </ul>	<ul style="list-style-type: none"> <li>• E2E<sup>1</sup> cross-functional squads</li> <li>• Flow-to-work</li> <li>• Self-managing teams</li> <li>• Specialist pools</li> </ul>	Deployed as needed, based upon the nature of the activity
Ways of Working	<ul style="list-style-type: none"> <li>• Lean management practices</li> <li>• Kaizen/continuous improvement</li> <li>• Kanban/visual workflow management</li> <li>• Jidoka/self-monitoring automation</li> </ul>	<ul style="list-style-type: none"> <li>• Scrum</li> <li>• Extreme programming</li> <li>• Kanban</li> </ul>	
Toolkit (examples, non-exhaustive)	<ul style="list-style-type: none"> <li>• Standup/daily performance dialogue</li> <li>• Value-stream mapping</li> <li>• Leader standard work</li> <li>• Root-cause problem solving</li> <li>• 5S/workspace management</li> <li>• Visual management</li> </ul>	<ul style="list-style-type: none"> <li>• Daily standup</li> <li>• Backlog</li> <li>• Sprints</li> </ul>	Applicable everywhere across the organization

**Underpinned by a common mindset and consistent set of principles**

<sup>1</sup> End-to-end.

ideas are similar across both systems but with different names. For example, lean management’s relationship service cells, an advanced type of work cell for longer-cycle projects, have many features in common with agile’s self-managed teams.

**New and better ways of working**

Ways of working are approaches or processes that teams use to get work done over time. Lean management includes integrated management practices and continuous improvement, or kaizen, with agile adding “scrum” teamwork management and extreme programming, emphasizing short development cycles and frequent releases. Not surprisingly, some ways of working, such as visual management tools, appear in both lean management and agile.

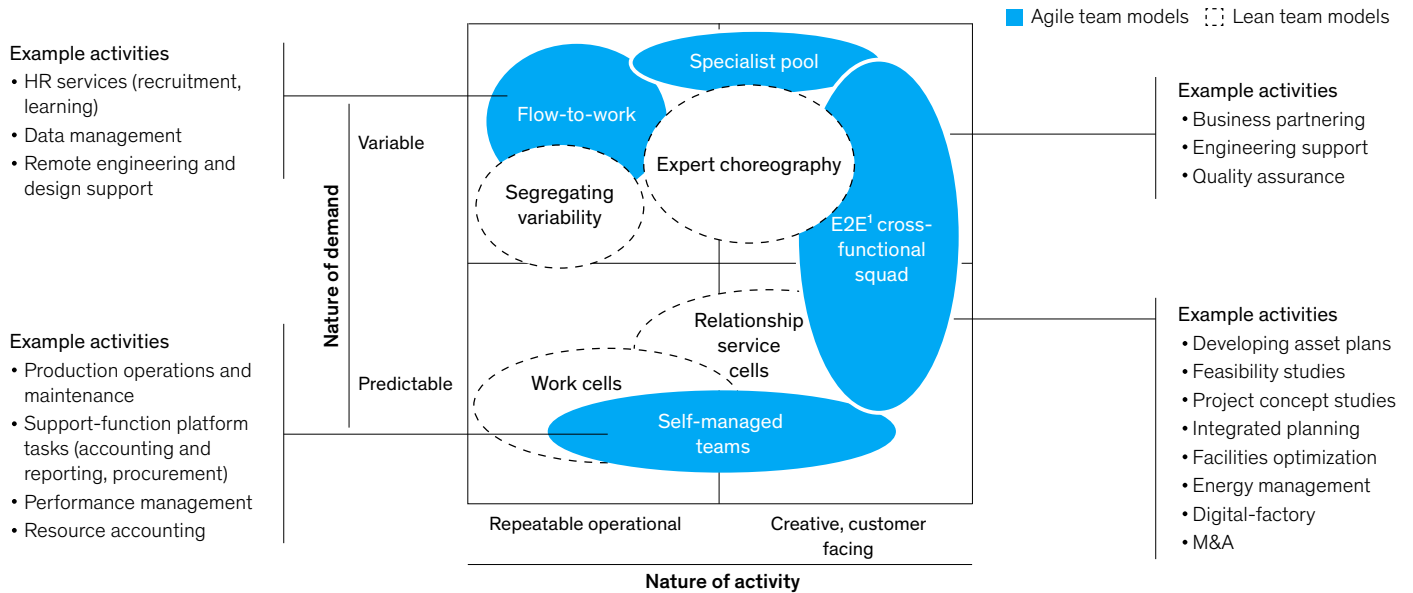
Typically, when someone says, “Lean management is for routine, repeatable operations,” they are really talking about something like a lean work

cell applying a methodology for continuous improvement. Similarly, an assertion such as “Agile is for creative product development” typically conflates agile with a cross-functional squad applying scrum, which requires a high level of communication for a team to achieve a common goal. Such statements fundamentally misconstrue both systems.

The right team model, way of working, and tools to use will depend on the nature of the activity being conducted (Exhibit 3). While lean management indeed was created for highly repeatable and predictable processes, over time it branched out to expert choreography, which coordinates complex interactions so that interdependencies are resolved before they become blockages, and relationship service cells, where processes center on a single point of contact with the customer. Agile found its origin in creative, customer-facing environments, but concepts like multifunctional

Exhibit 3

**Different lean-management and agile team models are suited to different activities.**



<sup>1</sup> End-to-end.

and self-managed agile teams are now also being used in back-offices or call centers. The best selection of team models, ways of working and tools may be a combination from both lean management and agile.

**The value of two**

A growing number of companies are getting better results under a best-of-breed model than they could by applying either lean management or agile systems on their own. Consider the following two case studies.

**Financial institution dramatically improves customer service**

A financial services provider was struggling with customer service. Its contact center was taking far too long to resolve inquiries—up to eight weeks in some cases—in part because the specialist teams were overwhelmed by the sheer volume of customer requests. Worse, the firm had no designated owner for the entire customer-service journey. Instead, it operated under a traditional structure in which requests were passed from one function to another. Each function operated independently, tracking performance metrics only for their own slice of

the process. No one was looking at the entire experience from a customer’s perspective.

The company used a combination of lean management and agile tools to improve. From the lean management toolkit, it used value-stream mapping and design thinking to completely rethink and restructure the customer experience for a given transaction or process. It also revamped key performance indicators to better reflect specific goals—for example, how fast a customer could get his or her issue resolved. From agile, the company created self-managing, cross-functional teams to improve collaboration and foster accountability. The new self-managing team enabled employees to handle all types of customer requests from end to end. Management also established a single point of contact for each process to reduce the number of internal handoffs and improve customer engagement.

Collectively, this approach led to a 90 percent reduction in the average time required to resolve a customer issue. Not surprisingly, customer satisfaction scores increased by 30 percent, as

did employee engagement. The reorganization means that teams are no longer bogged down by bureaucracy and instead can see how their individual contributions have a direct result on the customer experience—and thus on the company's overall performance.

### **A mining company creates a new operating system**

In the second example, a global mining company had been deploying lean management tools among frontline units for more than a decade with significant success. Frontline operations at a mining site have several attributes—physical operations, a constant workflow, predictable customer specifications and repeatable processes—that make them ideal for lean approaches like six sigma.

However, commitment and progress had stalled in recent years. To jump-start gains, the company began to apply some agile tools, ways of working and team models. Even in a process industry like mining, many activities require cross-functional collaboration and operating in variable environments, from developing new strategies and engineering process improvements to deploying innovative technologies. Agile team models such as the cross-functional squad are ideally suited to that kind of work and delivered impressive results: dedicated improvement squads increased engineering velocity by 200 percent, and a cross-functional “fuel and energy” transformation squad identified and delivered \$10 million of value within months.

More broadly, the company found that the agile transformation could be the banner to improve and

reinvigorate the existing lean management program among frontline units. The company selected a few specific tools from the agile toolkit and integrated these into daily, lean management-led operations.

The company established four-week sprint cycles—a time period that aligned with the rotation of workers at the front line. At the beginning of each sprint, teams gather to look over the plan for the upcoming four weeks and identify key events, such as major projects, visits by leaders, or onboarding of new employees, along with one or two themes where they want to explicitly focus their improvement activities. Similarly, at the end of each sprint, teams hold a retrospective session to analyze their performance against the objectives for that sprint and identify how they can work together more effectively in the future.

This relatively simple change—combined with a renewed focus on daily standups and visual management—led to a significant increase in engagement among the workforce with over 90 percent of frontline teams actively owning improvement initiatives and approximately 130 incremental improvements delivered within the first three months.

---

As these two examples show, lean management and agile are both powerful systems, and companies don't need to choose between them as either-or options. Rather, companies can apply this all-of-the-above approach, choose the tools and applications that are most relevant for their needs, and thus generate even greater improvements across the entire organization.

**Stefan de Raedemaeker** is a partner in McKinsey's Brussels office, **Christopher Handscomb** is a partner in the London office, **Sören Jautelat** is a partner in the Stuttgart office, **Miguel Rodriguez** is an expert in the Barcelona office, and **Lucas Wienke** is an expert in the Hamburg office.

Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Building the vital skills for the future of work in operations

Operationally intensive companies have entered a new wave of automation and digitization. That will have a big impact on the skills they need to remain competitive.

*by Kweilin Ellingrud, Rahul Gupta, and Julian Salguero*



© Tashi-Delek/Getty Images

**Technological progress** is enabling machines to complete many of the tasks that once required human beings. That new automation revolution will have a major effect on employment in the coming years. Nearly every job will change, many quite profoundly, and the overwhelming majority of today's employees will need to develop new skills. Preparing for the future of work is one of the defining business problems of our time—yet it is one that most organizations are not ready to address.

The transition to the automation revolution has been accelerated by the COVID-19 pandemic. Companies are emerging from the crisis into a world of workplace physical distancing and major changes in customer behaviors and preferences. Recovery is forcing organizations to reimagine their operations for the next normal. Manufacturing companies are reconfiguring their supply chains and their production lines. Service organizations are adapting to emphasize digital-first customer journeys and contactless operations. Those changes will have significant effects on the requirements for workforce skills and capabilities, from a dramatic increase in home-based and remote working to a need for shop-floor personnel to master new tools and newly urgent health and safety requirements.

The future of work will require two types of changes across the workforce: upskilling, in which staff gain new skills to help in their current roles, and reskilling, in which staff need the capabilities to take on different or entirely new roles. Our research suggests that the reskilling challenge will be particularly acute in operationally intensive sectors, such as manufacturing, transportation, and retail, and operations-aligned occupations, such as maintenance, claim processing, and warehouse order picking.<sup>1</sup> Those sectors and occupations will experience a magnitude of change greater than the global average because they often employ large numbers of people and because the predictable

and repetitive nature of many operational tasks makes them particularly suitable for automation or digitization.

Our analysis suggests that 39 to 58 percent of the worldwide work activities in operationally intensive sectors could be automated using currently demonstrated technologies. That is 1.3 times the automation potential of activities in other sectors (Exhibit 1).

Beyond the scale of the coming changes in workplace roles and activities, what matters most is the nature of those changes. Increasing automation will significantly shift the skill profiles of tomorrow's jobs. That has implications for employers and employees alike. Companies will need people with the right skills to develop, manage, and maintain their automated equipment and digital processes and to do the jobs that machines cannot. Workers will need the skills that enable them to access employment.

In Europe and the United States, for example, demand for physical and manual skills in repeatable and predictable tasks is expected to decline by nearly 30 percent over the next decade, while demand for basic literacy and numeracy skills would fall by almost 20 percent. In contrast, the demand for technological skills (both coding and especially interacting with technology) is expected to rise by more than 50 percent, and the need for complex cognitive skills is set to increase by one-third. Demand for high-level social and emotional skills, such as initiative taking, leadership, and entrepreneurship, is also expected to rise by more than 30 percent (Exhibit 2).

### **Leaders are unprepared**

In operationally intensive sectors, leaders recognize that automation and digitization will likely create significant skill gaps, but most report feeling

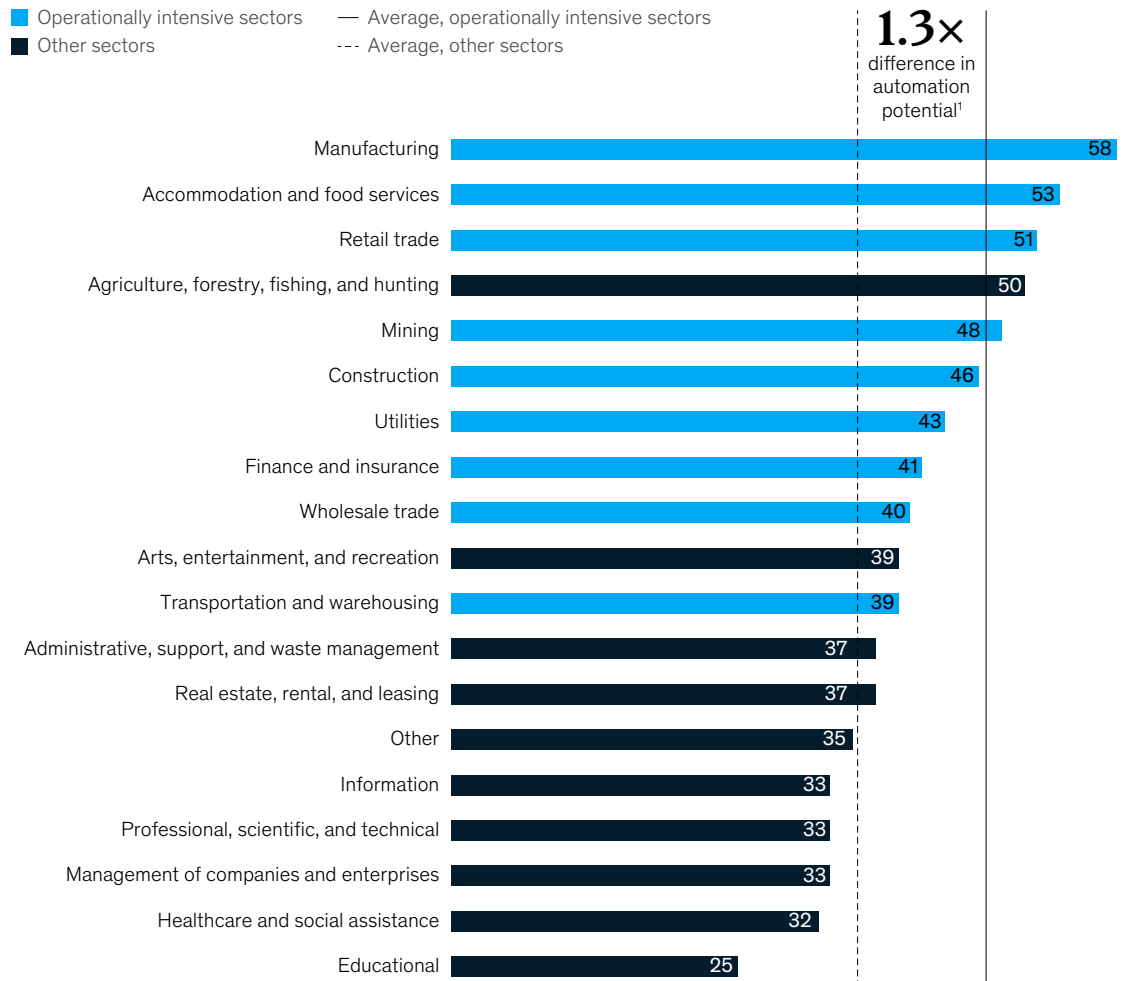
---

<sup>1</sup> To investigate the impact of automation on operationally intensive activities, we looked at specific sectors and occupations. Operationally intensive sectors include construction, finance and insurance, food service and accommodation, manufacturing, mining, oil and gas, retail, transportation, utilities, and wholesale trade. Operations-aligned occupations include facilities management, frontline customer service and sales, frontline equipment repair and installation, frontline production, frontline trade work, logistics transportation and warehousing, order and claim processing, procurement, and skilled operations work.

Exhibit 1

## Operations-intensive sectors have 1.3 times the automation potential of other sectors.

Technologically automatable activities by sector, % of total activities



<sup>1</sup>We define automation potential by the work activities that can be automated by adapting currently demonstrated technology. Source: McKinsey Global Institute analysis

unprepared for the challenge. In a 2017 McKinsey survey of 116 executives at large organizations, nearly two-thirds of respondents said skills were a top ten issue for their companies. Only 7 percent of respondents thought that their companies were fully prepared to address the skill gaps that they expected over the subsequent five years.

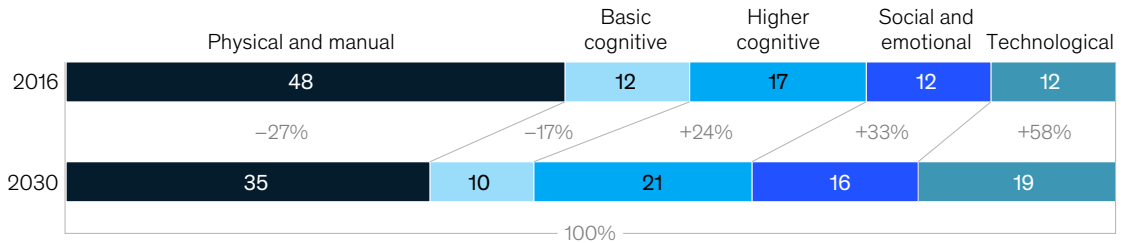
When we asked executives in the survey why their organizations were not yet ready to tackle the skill issue, they cited three main barriers. More than one in four respondents said they lacked a clear understanding of the impact that future automation and digitization would have on skill requirements. Nearly one in four said they lacked the tools or the



Exhibit 2

**Automation will have a significant impact on skill requirements.**

**Skill shift in US and Western Europe by category, % of time spent**



Note: Figures may not sum to 100%, because of rounding.  
Source: McKinsey Global Institute analysis

knowledge to quantify the business case for efforts to reskill their workforces. And almost one-third thought that their current HR infrastructure would not be able to execute a new strategy designed to address emerging skill gaps (Exhibit 3). Across industries, our latest survey data indicate that these problems persist today.

**The central role of reskilling**

Companies can use several different approaches to address skill gaps. They can look outside the organization, hiring new staff with the right skills. They can build skills internally, retraining their existing workforces to prepare people for new roles. Or they can take a hybrid approach, including using a skilled contract workforce to fulfil short-term needs while developing the necessary skills internally.

Most organizations are likely to adopt a mix of those models. They may look to the external market to fill certain specialized, highly technical roles such as data scientists, while aiming to fill new frontline roles, such as robot controllers and production-exception handlers, from their existing workforces. We believe that ongoing shifts in societal attitudes will increase the expectation that companies do more to retain and retrain their current workers wherever possible.

Executives in our survey are broadly united in the view that their organizations have a significant role to play in the skill transition. Two-thirds of respondents think that corporations should take the lead in the development of the new skills required for the digital era, and 80 percent say at least half of all new roles should be filled by reskilling existing workers. That question reveals some important geographical differences, however. Among European respondents, 94 percent think that the balance between hiring and reskilling would be either equal or tipped in favor of reskilling, but the equivalent figure is only 62 percent among US executives. That may reflect differences in local employment cultures and legal provisions.

To make good on their large-scale reskilling aspirations, most organizations will need to significantly ramp up their employee training and capability-building efforts. A number of large organizations have already begun to do so. Global retailer Walmart, for example, is investing \$4 billion over four years to help staff in frontline and back-office jobs transition to new customer-service-oriented roles. E-commerce giant Amazon has pledged to spend \$700 million on technology training by 2025 to help employees move to higher-skill jobs. Professional-services company

Exhibit 3

**Large-scale reskilling efforts must overcome significant barriers.**

**Reported barriers to reskilling by sector type,**  
% of respondents<sup>1</sup>

■ Operationally intensive sectors  
■ Other sectors



<sup>1</sup>Private-sector organizations with >\$100 million in annual revenue that view the skill gap as a top 10 priority. Source: McKinsey survey, November 2017; McKinsey analysis

ManpowerGroup has entered a partnership with education company Pearson and others to upskill 130,000 workers over the next five years.

It may take several years for these global reskilling programs to pay back, but they are visible and important investments. Some companies are already reaping returns from smaller-scale reskilling efforts. Tata Steel's plant in Ijmuiden, the Netherlands, for example, established an advanced-analytics academy to train and certify hundreds of engineers on the application of new analytical approaches to manufacturing-process improvement. Using the new techniques helped the plant to boost its earnings before interest, taxes, depreciation, and amortization by more than 15 percent, despite significant cost pressures across the global steel sector.

**Preparing for the future of work**

Our analysis of companies that have embarked on large-scale, systematic efforts to address future skill requirements suggests that the

most successful programs share certain core elements. Above all, they are integral parts of their organizations' overall digital strategies. In fact, senior executives cite talent as the biggest barrier to achieving their digital strategies—those two factors must be deeply connected for success in both. Many companies have learned the hard way that a digital transformation has many moving parts, with multiple elements that must be addressed together to ensure that new approaches deliver real value, are accepted by the wider organization, and can be implemented and sustained at scale.

In our work with the World Economic Forum's Global Lighthouse Network of advanced manufacturing companies, for example, we found that while such companies make extensive use of smart technologies in their operations, they pay equal attention to their business processes, their management systems, and their people.

Second, the programs address every level of the organization. Successful companies approach automation and digitization as a comprehensive

transformation program, driven by top management and involving the majority of the organizations' managerial workforces.

Third, most successful companies tailor and customize their training to match both the organizations' goals and the needs of individual learners, from CEOs to frontline operators. Training content is made as specific as possible, covering the technologies, tools, and business scenarios that individuals will face in their new or changing roles.

Finally, content is delivered using adult-learning principles via a combination of classroom or online learning and real, on-the-job experience. In addition to making use of technical content, successful reskilling programs are designed to help learners alter their mindsets: they teach employees about new ways of working and emphasize the personal- and professional-growth opportunities available to them.

### Scout, shape, and shift

In the coming years, almost every operations-intensive organization will need a systematic approach to the challenge of shifting skill requirements. Designing, building, and executing such an approach requires three broad steps: scout, shape, and shift (Exhibit 4).

The first step is workforce planning. Companies must scout their future skill needs, analyzing the skills required to deliver on their strategic ambitions. As we noted previously, skill demands are

determined by an organization's wider technology strategy, so understanding the potential impact of automation and digitization across an organization and developing a robust strategy to capture those opportunities is a necessary precursor to any "rightskilling" program.

Once an organization understands the combination of skills it requires for future roles, it can match those requirements against the skills available in its current workforce to plan how staff can be redeployed over time and identify the gaps that must be filled to meet the needs of both existing and new roles (Exhibit 5). During the planning phase, companies should also assess the underlying factors that can make or break a reskilling program. Those include the capabilities of an organization's existing HR and training infrastructure, as well as the willingness of its workforce to embrace change.

Next, an organization should prioritize the skills that affect the largest number of employees and the roles that require the largest skill shifts and develop content and delivery mechanisms for each of its priority cohorts. JPMorgan Chase has introduced several schemes to develop the digital skills of current and future workers as part of its five-year, \$350 million commitment to skill building. They include a ten- to 14-week immersive coding academy for high-performing technology staff and a degree apprenticeship that allows people to earn a degree while working within the company's technology business. A large integrated energy company uses a gamification approach to train

Exhibit 4

### An end-to-end skill transformation follows a three-phase approach.



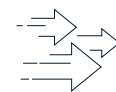
#### Scout

Analyze skill demand vs supply to deliver on strategic ambitions



#### Shape

Design program architecture to close demand–supply gap

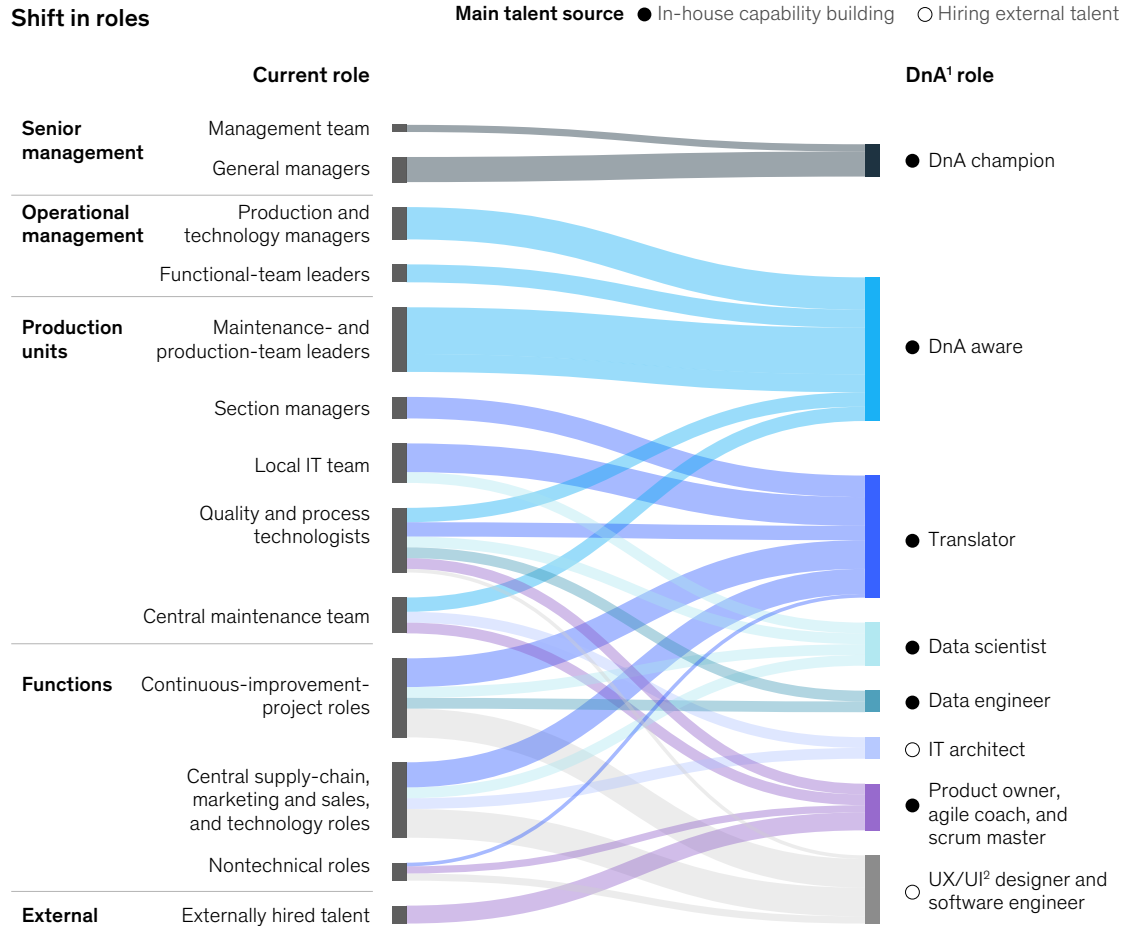


#### Shift

Stand up infrastructure and capabilities to reskill at scale

Exhibit 5

## Creating the right talent pool for a digital and analytics transformation combines in-house capability building and hiring for specific roles.



<sup>1</sup>Digital and analytics.  
<sup>2</sup>User experience and/or user interface.

operational staff in new, digitally enabled working methods. Staff are given access to a library of online apps in which they complete progressively more challenging tasks. Their results are recorded in an individual training account, and high performers receive both public recognition and financial reward.

At the center of a skill-shaping effort should be a talent-transition hub and a corporate academy that oversee the delivery of reskilling programs, allocate employees to learning journeys, and provide

reskilled staff to the parts of the business that need them most. The hub will also be responsible for ensuring that an organization's reskilling system grows and adapts to suit the needs of the business, tracking the performance and impact of the program and using agile techniques to test, adapt, and refine curricula and learning systems.

The relationship between an organization and its people is a two-way street, and the design phase of a future-of-work program should also focus on

# The relationship between an organization and its people is a two-way street, and the design phase of a future-of-work program should also focus on a business's offer to its staff.

a business's offer to its staff. Companies need to develop clear and compelling value propositions for employees to ensure that their existing staffs see the benefits of developing new skills—and so the organizations can attract external talent to fill the specialized roles for which there are insufficient internal candidates.

Finally, companies need to shift the skill profiles of their entire organizations by developing and deploying the infrastructure and capabilities necessary to reskill at scale. While all employees may need to upskill themselves in broad topics, such as the business value and applications of digital and analytics, some may need much deeper and targeted reskilling for particular new roles.

Preparing for the future of work is set to become an integral part of every organization's digital and automation strategy. The imperative for action in operationally intensive companies and sectors is particularly strong, as technology profoundly alters the way their work is done. Is your organization ready to respond?

- How will your digital transformation ensure that your people are equipped to meet future skill demands?
- Is your reskilling program evolving to make effective use of new technologies and approaches to learning?
- What is your organization offering existing and potential employees to ensure that it can attract and retain the talent it needs?

---

**Kweilin Ellingrud** is a senior partner in McKinsey's Minneapolis office, **Rahul Gupta** is an expert in the Boston office, and **Julian Salguero** is a partner in the Miami office.

The authors wish to thank Aaron De Smet, Katy George, James Hale, Kate Lazaroff-Puck, Susan Lund, Angelika Reich, and Andrea Westervelt for their contributions to this article.

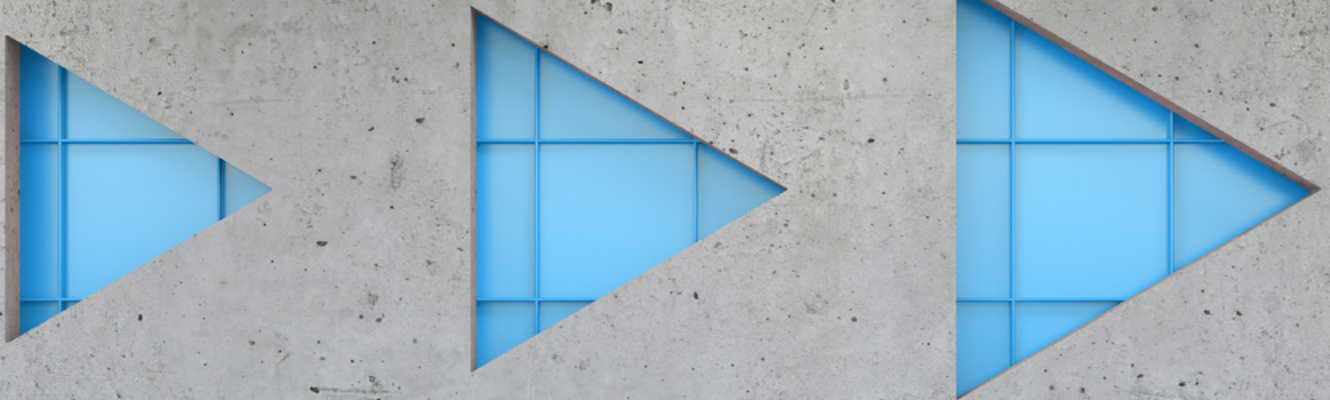
Designed by Global Editorial Services  
Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Breaching the great wall to scale

Introducing a new operating model is hard. Doing so quickly is even harder. Under pressure to accelerate their transformation, how can companies overcome the barriers that often hold them back?

*This article was a collaborative effort by Sohil Kalra, Charles-Henri Marque, Alexis Renaud-Bezot, Ricardo Ribelles, and Rob Whiteman, representing views from McKinsey's Service Operations Practice.*



**Amid unprecedented challenges**, companies around the world have been evolving their operating models at unprecedented speed: shifting entire workforces to a remote model, for example, or reallocating resources and developing new digital capabilities in a matter of weeks in order to meet rapidly changing customer preferences.

For most organizations, crisis has provided new urgency to a process of change that was already underway. Even before 2020, many of the world's largest companies were investing heavily in new technologies and new ways of working. Financial services group JP Morgan Chase, for example, invests \$11 billion every year in digital projects, and employs 50,000 technologists across its businesses. It became the first major bank to roll out AI-powered virtual assistants. Walmart added 1,700 technology-focused staff to its workforce in 2018 alone. The company is now estimated to have the world's third largest IT budget.

Despite significant effort and substantial investment, however, relatively few big companies have made the shift to new digitally-enabled ways of working across their operations. In this article, we explore why companies hit the "great wall to scale", look at some of the key pitfalls to avoid, and suggest a set of actions to maximize the chances of a successful operating-model transformation.

## **The next-generation operating model**

When companies began to experiment with digital enhancements, automation, or artificial intelligence (AI), one truth quickly emerged: transforming involves more than just developing new technological solutions and plugging them into the existing environment. To reach their full potential, new technologies require processes to be redefined and simplified, data flows to be rewired, and the orchestration of work between humans and machines to be reengineered. Together, they imply a next-generation operating model—a new way of running the organization

that combines digital technologies and operations capabilities in an integrated, well-sequenced way, thereby achieving dramatic improvements in revenue, customer experience, and cost.

We have identified three common characteristics shared by the minority of organizations that have managed to deploy a next-generation operating model at scale.

- *A truly end-to-end, value-stream orientation.* These leaders redesign their core operations to align with their most important value streams and customer journeys. A few critical success measures, including effectiveness, efficiency, and customer-related metrics, are systematically recorded and reviewed—both within functions and end-to-end as work moves from function to function.
- *A strategic aspiration.* The organization dedicates a significant part of its financial and human resources to the development and integration of new technologies, such as automation, advanced analytics, or AI, into its operations. These companies often establish centers of excellence for specific digital technologies, and their promotion is the responsibility of a dedicated C-level executive.
- *An enterprise-wide continuous-improvement engine.* These organizations have a managerial culture, expressed through carefully designed practices and systems, that enable continuous improvement at the front line. They also adopt agile approaches in critical processes, such as capital allocation.

Companies that successfully deploy a next-generation operating model at scale have created significant new value. One bank has seen its revenue increase by 25 percent and its operational costs decrease by 40 percent, while customer satisfaction improved by 15 percent. A telecommunications company has cut its time-to-market by a factor of ten, while employee satisfaction increased by 10 percent.

## The great wall to scale

At-scale transformation to a next-generation operating model remains rare, however. A survey we conducted of more than 1,000 companies shows that while most have made some progress in modernizing their operations, less than one-third have managed to move beyond the pilot phase. Moreover, the last two years have seen little improvement in this situation (exhibit). For the majority of companies, the great wall to scale appears almost impenetrable.

### Another brick in the wall... and more

Many hurdles can hamper an organization's efforts to roll out a new operating model, but we believe that five specific issues stand in the way of the majority of large-scale transformation efforts.

*Distraction: losing senior-management attention.* Transitioning to a next-generation operating model is not a one-off effort. Generating the first

major, enterprise-wide improvements usually takes two to three years, and the building of a continuous-improvement engine to extract more value on an ongoing basis. These long time spans make it easy for top management to lose interest. Common symptoms include failing to formalize the transformation as one of the organization's top two strategic priorities, failing to translate the transformation ambition into tangible and measurable targets, and failing to adapt incentive systems to focus all layers of the organization on their role in the transformation.

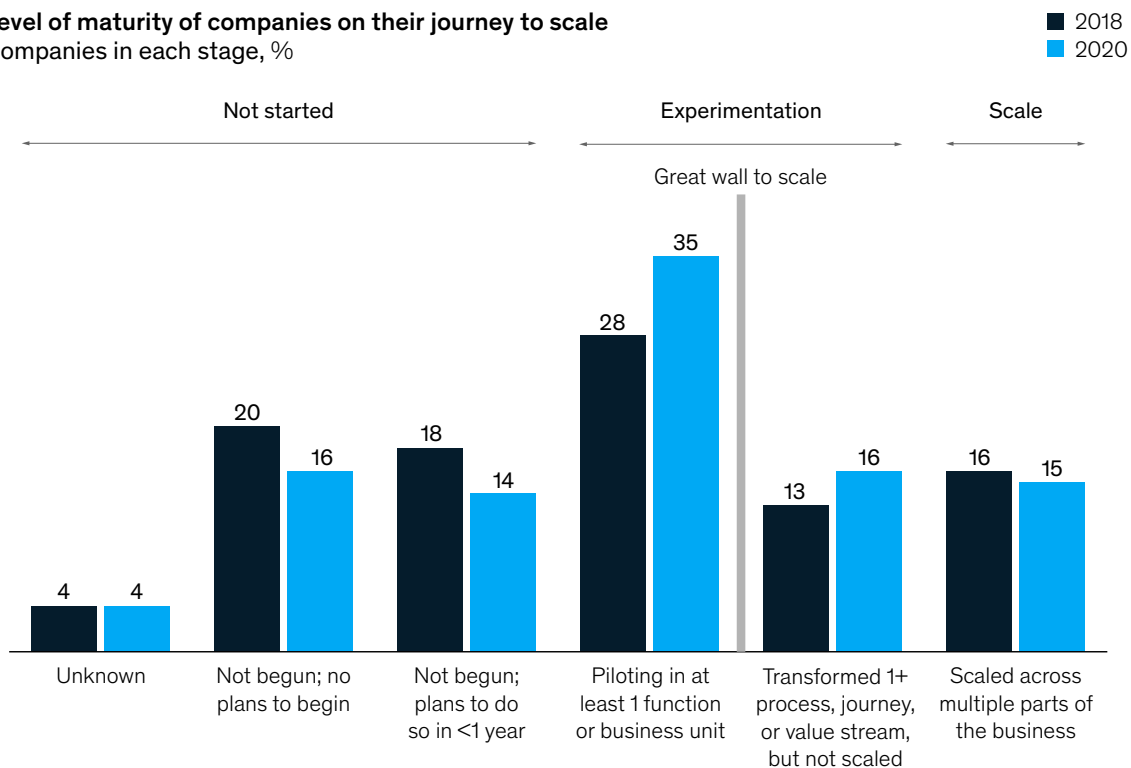
*Starvation: underfunding the effort.* Our colleagues' Power Curve research indicates that the ability to rapidly shift financial and human capital to new strategic priorities is a crucial attribute of the world's most successful organizations. Yet, when it comes to operational transformation, too many companies are nervous about such bold moves. Leaders can be held

Exhibit 1

## The great wall to scale separates pilot projects from enterprise-wide transformation.

### Level of maturity of companies on their journey to scale

Companies in each stage, %





back by multiple factors, including risk aversion and the difficulty of challenging established cultures and operating models. Whatever the reason, the result is the same: the transition to a next-generation operating model is underfunded. The change team is expected to perform miracles, building the necessary excitement, momentum, and capabilities across the organization with only 25 to 50 percent of the investment it would need to drive real results. The experience of large companies that have successfully transformed shows that this requirement often translates to a resource allocation of more than \$100 million.

*Overextension: trying to run before you can walk.* At the other end of the spectrum, some organizations become so galvanized by their vision that they try to do too much too soon, implementing multiple improvement levers in every business unit at once. Moving too fast makes it difficult for the organization to internalize the change. And having several groups climbing the learning curve at the same time can hinder the spread of institutional learning, leading to duplication of work and investments, and unnecessary complexity down the line. Excessive speed can also mean program teams are spread too thinly across the organization, unable to support or coordinate initiatives effectively.

*Underestimation: ignoring the human factor.* Despite the advanced technologies involved, the transition to a next-generation operating model is primarily a cultural and mind-set shift. For new technologies to add value at scale, they must be adopted by employees and customers alike. Companies that ignore this necessity quickly lose the confidence of both groups and fail to capture tangible gains from their investments. Underestimating the need for education, communication, and reskilling during a transformation has left many organizations in “pilot purgatory,” with ineffective models that prove impossible to scale.

*Tunnel vision: failing to rewire supporting structures.* A successful next-generation operating model requires close attention to value streams, such as customer journeys or end-to-

end processes, but this focus is not enough to support a transformation at scale. A company will also need to change how it works beyond operations, from revisiting incentive structures (so they improve cross-functional collaboration and effectiveness) to redesigning organizational structures (for clearer accountability on each major value stream). Without an aligned, supportive environment, a new operating model can wither and die.

## **The secrets of success at scale**

From interviews with the leaders of companies that have successfully implemented new operating models, several factors emerged that can help lift an organization over the great wall of scale.

### **The right organization and governance**

A leading emerging-market financial institution needed to pull several organizational levers to capture the full value of its transformation. A central part of the change was the shift from a function-based organization to one built around customer journeys. In its credit-card business, for example, the company integrated technology, sales, risk, compliance, and operations specialists into a single, multidisciplinary credit-card onboarding squad, which was given responsibility for the entire customer-onboarding process from end to end.

The company realized that to scale the next-generation operating model, it would need strong alignment though a company-wide change-management plan. Leaders created dedicated centers of excellence (CoEs) to standardize and disseminate new approaches, together with a transformation office to track progress and support change across the business. To ensure sustained leadership from the top down, the company created new leadership roles, such as “journey owners” to oversee entire customer journeys, and made the transformation a priority for the whole C-suite agenda.

### **Appropriate metrics and incentives**

A redefined operating model requires not only organizational changes, but also a shift in how

performance is defined, tracked, and managed. These measures help drive behavioral change so that new processes and continuous-improvement systems become part of the company's DNA.

A North American life insurer now incentivizes its entire organization against a balanced set of metrics, including efficiency, quality, effectiveness, customer experience, and employee experience. Another organization includes both functional and cross-functional metrics, such as end-to-end turnaround time, in its scorecard for managers. That approach encouraged collaboration between functions, together with a set of formal forums to assemble all stakeholders in solving specific problems. Other organizations define success against both "run" metrics and "change" metrics, allowing leaders to make better tradeoffs between managing day-to-day operations and pushing the transformation forward.

Beyond metrics and incentives, high-performing companies also pay attention to their management culture. Empowering lower-level leaders to make decisions, innovate, and take appropriate risks is critical for any organization that hopes to evolve at speed.

### **A clear talent strategy**

Skilled people are the fuel that powers every organization. Indeed, our research suggests that companies with effective capability programs are at least three times more likely to achieve a successful transition to a next-generation operating model.

Operating-model transformations require several distinct capability-building efforts. The largest of these is likely to involve a significant fraction of the organization's overall workforce, as automation and digitization alter skills requirements. In one cross-industry survey of more than 1,200 executives, almost 90 percent reported believing that they will face skills gaps in the workforce over the next five years. The scale of the upskilling and reskilling challenge will likely require companies to deploy capability-building programs that are broader and more rigorously monitored than is typical today. E-commerce giant Amazon, for example, is investing \$700 million to train 100,000 employees for higher-skilled jobs.

An organization hoping to transform its operating model will also need people capable of driving change. That means developing a number of new or reimagined roles, including process designers, change agents, coaches, and trainers. A structured development program that recruits high-potential candidates from within the business, and allows them to develop new skills on the job, can simultaneously accelerate the implementation of the transformation program while building valuable capabilities for broader reskilling and change projects long-term.

### **Revamped support functions**

To support the pace of change required to transform toward a next-generation operating model, organizations can increase the velocity at which they allocate and provide resources (both human and financial) to support functions.

From an HR perspective, this means the function provides the right set of skilled workers at the right time and the right cost. HR gets closer to its "customers" in the wider business, becoming a strategic partner that helps define new roles and capability requirements. HR will need to be nimble in response to rapidly evolving talent requirements, and innovative in the application of new acquisition strategies, external partnerships, and reskilling initiatives.

The finance function, on the other hand, can allow for rapid reallocation of financial resources, moving away from annual planning cycles and adopting a faster, more flexible quarterly business review to rapidly redirect funds where they are most needed and likely to have the highest return on investment. Finance also plays a role of "value assurance unit," ensuring that the objectives and key results (OKR) of agile squads' can be linked to financial metrics.

### **A strategic technology partner breaking down silos**

Like HR and finance, the IT function will also want to adapt its operating model to work much more closely with its colleagues in operations. Effective teams cut across not only functions but also technologies, including automation and advanced

analytics, with representation from roles such as architects, engineers, developers.

An important task for the IT function will be to continuously maintain and refresh its roadmaps across technologies and parts of the organization, so that the organization's technologies evolve toward a consistent, unified architecture. For example, one large bank invested tens of millions of dollars in its AI transformation without revisiting its IT architecture, or its data-management or data-security processes. Hampered by structural problems, the effort delivered only a handful of proof-of-concept applications in two years. To accelerate and energize its transformation, the bank's business and IT functions engaged in a

six-week effort that redefined the organization's IT vision and roadmap.

---

The successful transition to a next-generation operating model will require organizations to overcome the barriers to scale that have hampered many earlier transformation efforts. That will mean looking beyond technology, with a sustained focus on the organization, talent, and enabling infrastructure. With the right foundation in place, organizations can deliver immense value: distinctive customer experience, resilient and nimble operations, and highly engaged and motivated employees.

**Sohil Kalra** is a consultant in the Toronto office; **Charles-Henri Marque** is an associate partner in the Chicago office, where **Rob Whiteman** is a partner; **Alexis Renaud-Bezot** is a consultant in the Montreal office; and **Ricardo Ribelles** is a consultant in the Santiago office.

Copyright © 2020 McKinsey & Company. All rights reserved.

Operations Practice

# Taking supplier collaboration to the next level

Closer relationships between buyers and suppliers could create significant value and help supply chains become more resilient. New research sheds light on the ingredients for success.

*by Agustin Gutierrez, Ashish Kothari, Carolina Mazuera, and Tobias Schoenherr*



© Getty Images

**Companies with advanced procurement functions** know that there are limits to the value they can generate by focusing purely on the price of the products and services they buy. These organizations understand that when buyers and suppliers are willing and able to cooperate, they can often find ways to unlock significant new sources of value that benefit them both.

Buyers and suppliers can work together to develop innovative new products, for example, boosting revenues and profits for both parties. They can take an integrated approach to supply chain optimization, redesigning their processes together to reduce waste and redundant effort, or jointly purchasing raw materials. Or they can collaborate in forecasting, planning and capacity management, improving service levels and mitigating risks, strengthening the combined supply chain.

Earlier work has shown that supplier collaboration

really does move the needle for companies that do it well. In one McKinsey survey of more than 100 large organizations in multiple sectors, companies that regularly collaborated with suppliers demonstrated higher growth, lower operating costs and greater profitability than their industry peers (Exhibit 1).

Despite the value at stake, however, the benefits of supplier collaboration have proved difficult to access. While many companies can point to individual examples of successful collaborations with suppliers, executives often tell us that they have struggled to integrate the approach into their overall procurement and supply chain strategies.

### Barriers to collaboration

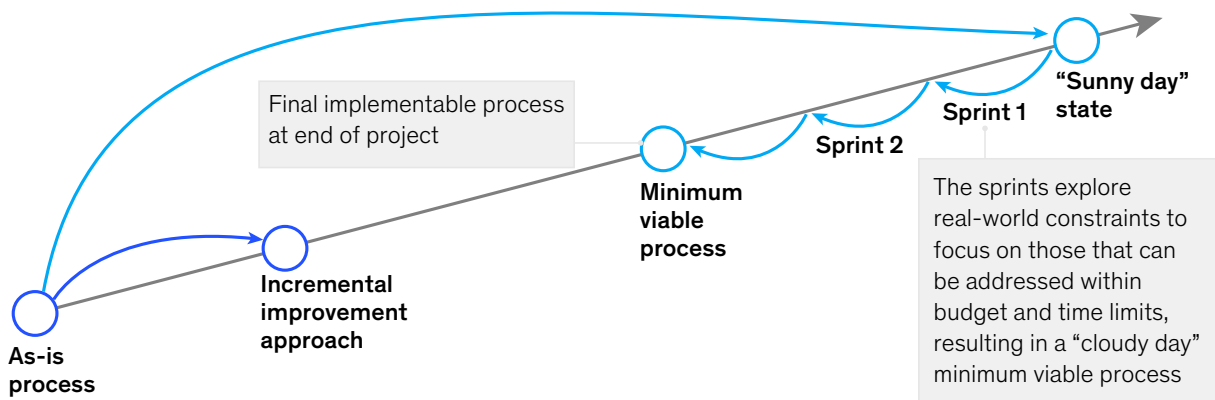
Several factors make supplier collaboration challenging. Projects may require significant time and management effort before they generate

Exhibit 1

## Zero-based design's reach exceeds that of traditional improvement approaches.

**Traditional approaches** take significant time and effort to:

- Detail the many levels of the as-is process
- Identify and remove waste
- Implement incremental improvements



**Zero-based design** is an **outcome-focused approach** that involves:

- Starting with an optimal clean-sheeted process
- Iteratively reintroducing and addressing constraints based on what is necessary to deliver the process in reality

value, leading companies to prioritize simpler, faster initiatives, even if they are worth less. Collaboration requires a change in mindsets among buyers and suppliers, who may be used to a more transactional or even adversarial relationships. And most collaborative efforts need intensive, cross-functional involvement from both sides, a marked change to the normal working methods at many companies. This change from a cost-based to a value-based way of thinking requires a paradigm shift in many firms that is difficult to come by.

The actual value generated by collaborating can also be difficult to quantify, especially when companies are also pursuing more conventional procurement and supply-chain improvement strategies with the same suppliers, or when they are simultaneously updating product designs and production processes. And even when companies have the will to pursue greater levels of supplier collaboration, leaders often admit that they don't have the skill, lacking the structures they need to

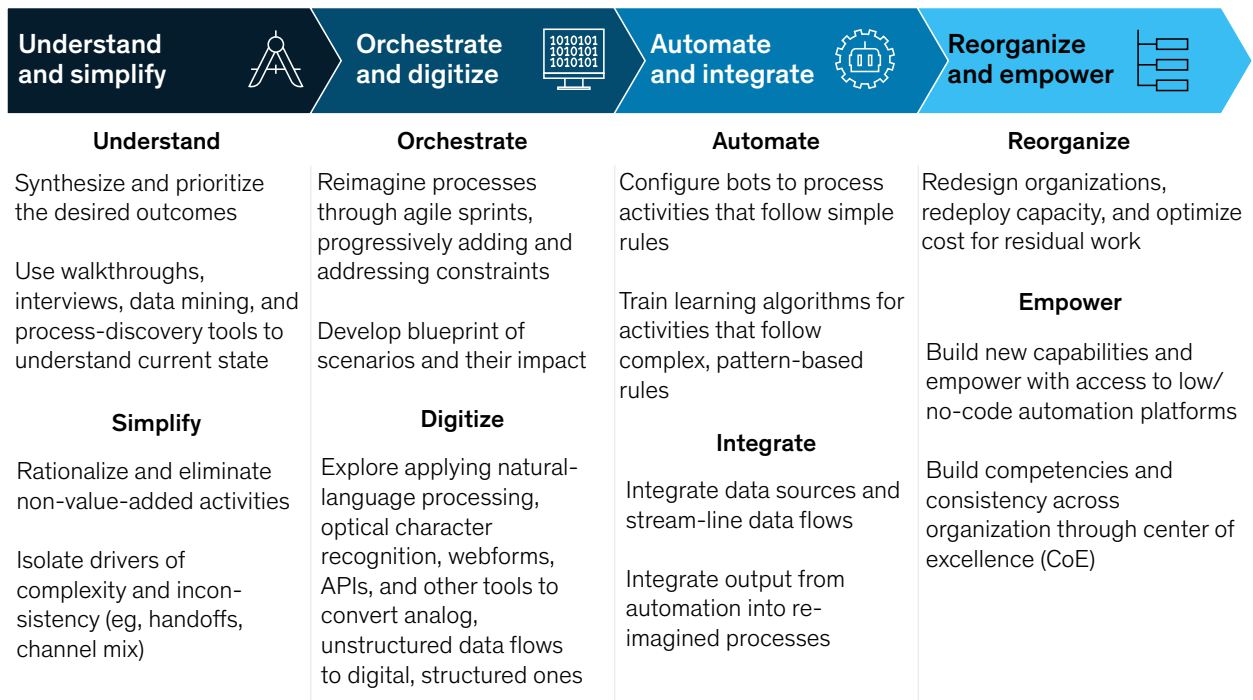
design great supplier-collaboration programs, and being short of staff with the capabilities to run them. After all, what great supplier collaboration necessitates is much more than the mere application of a process or framework—it requires the “buy in” and long term commitment of leaders and decision makers.

### A shared perspective

To understand more about the factors that hamper or enable supplier-collaboration programs, we partnered with Michigan State University (MSU) to develop a new way of looking at companies' use of supplier collaboration. The Supplier Collaboration Index (SCI) is a survey- and interview-based benchmarking tool that assesses supplier-collaboration programs over five major dimensions (Exhibit 2).

Exhibit 2

## The four steps of zero-based design help scale operations sustainably.



During 2019, researchers from McKinsey and MSU rolled out the Index in a pilot project involving a dozen leading consumer-goods companies in North America, along with ten to 15 of each company's strategic suppliers. We collected more than 300 written responses from more than 130 organizations, and conducted in-depth interviews with around 60 buyer and supplier executives. The work provides some important insights on the state of supplier collaboration today, revealing the elements of collaboration that companies and suppliers believe are working well, and the areas that present the greatest challenges.

The results of our consumer-industry benchmark are summarized in Exhibit 3, with average buyer and supplier perceptions of their own collaboration programs rated from one (low) to ten (high) in each of the five dimensions.

Overall, the research reveals close alignment between buyers and suppliers on the relative strength of most dimensions. It also shows a clear drop in perceptions of strength as the discussion moves from theory (strategic alignment) to execution (value creation and sharing, organizational governance).

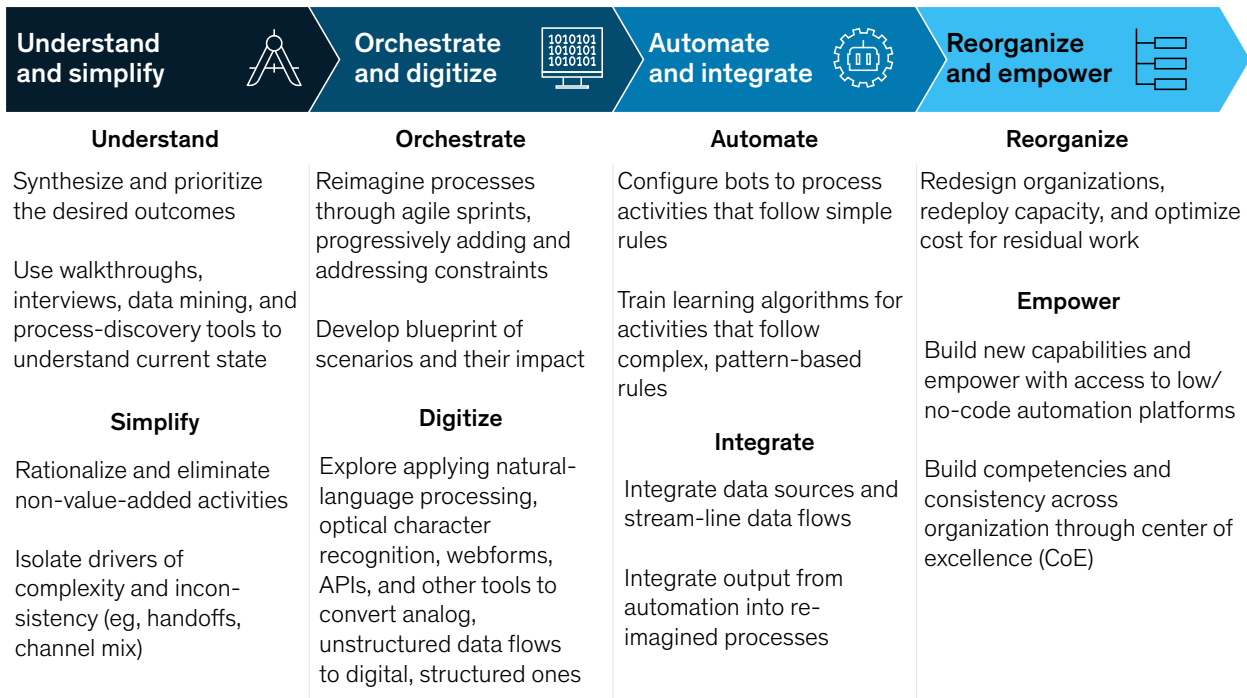
The in-depth interviews conducted with senior buyer and supplier personnel as part of the SCI data-collection process provide further insights into the challenges companies face in each of the five dimensions, while also revealing some examples of best practice that lower-performing companies can emulate.

### Achieving strategic alignment

Benchmark participants understood who their strategic suppliers are, although they do not all use formal segmentation approaches to categorize

Exhibit 3

## The four steps of zero-based design help scale operations sustainably.



their supply bases. Likewise, suppliers understood their strategic importance to their customers. Buyers and suppliers agreed that there was good alignment on the pursuit of sources of value beyond cost—but also agreed that their efforts to capture these value sources were not always successful.

The first step for an organization is to define what it wants to achieve from its collaboration efforts, and what it needs to do to realize those goals. Internal alignment and commitment by senior managers to ensure appropriate resources are available is also critical. For example, in a quest to develop more sustainable detergents, Unilever partnered with Novozyme—a major supplier of enzymes—to jointly develop new enzyme solutions. The collaboration leveraged each party's strengths, merging Unilever's understanding of which types of stains and materials were most relevant with Novozyme's reagent-optimization capabilities. The partnership resulted in two enzyme innovations that improved product performance, increased market penetration, and allowed the company to target premium-branded competitors. Moreover, the new formulation performed well at lower temperatures, helping customers save energy and reduce CO2 emissions.

Other organizations participating in SCI have introduced formal methods to promote greater strategic alignment, such as by introducing a joint business-planning approach. The buyer and supplier align on short- and long-term business objectives, set out mutual targets, and jointly develop plans to achieve objectives. Areas of opportunity for collaboration include growth, innovation, productivity, quality, and margins (see sidebar, "Joint business planning").

#### **Communication and trust**

Buyers and sellers both describe high levels of trust in relationships that they consider strategic. In most cases, that trust has been built up over time, based on longstanding business relationships. Companies involved in collaborations tend to appreciate each other's capabilities, understand each other's businesses, and agree that their partners will stick to the commitments they make.

Companies are less convinced, however, that their partners will be ready to put the interests of the collaboration above the interests of their own organization. Many interview participants noted that greater transparency over sensitive areas such as costs was key to attaining the highest level of collaboration, but said that this goal was often difficult to achieve.

Building trust takes time and effort. Often this means starting small, with simple collaboration efforts that deliver results quickly, building momentum. This way, companies can demonstrate a serious approach to collaboration and their willingness to share gains fairly. More importantly, companies should base their relationships on transparency and information sharing as a foundation, with the expectation that greater trust will follow.

Cosmetics company L'Oréal follows this approach to encourage collaborative innovation. Through open dialogs concerning company goals and long-term commitment, L'Oréal has been able to establish an effective codevelopment process. The company's "Cherry Pack" exhibition, for example, offered suppliers a preview of the consumer trends that the company would be working on, and asked them to develop packaging solutions in harmony with these trends. During the exhibition, L'Oréal created a trust-based forum for suppliers to present the ideas and products in development—including ideas that had yet to be patented. The forum thus gave suppliers access to practical short- and long-term ideas and projects that ultimately accelerated packaging innovation.

#### **Cross-functional engagement**

To generate value from changes in manufacturing methods, quality-assurance regimes, or supply-chain processes, representatives from the respective functions on both sides of the partnership will need to work together. Yet this type of cross-functional engagement is something most benchmark participants find extremely difficult. Executives reported that while traditional relationships—such as those



## Joint business planning

**Joint business planning** is a collaborative planning process in which the company and its supplier align on short- and long-term business objectives, agree on mutual targets, and jointly develop plans to achieve set objectives (exhibit). It brings a formal approach to collaboration with suppliers and helps to engage stakeholders from different functions in the collaboration effort.

Joint business planning works best when companies have a clear understanding of the strategic suppliers with which they want to engage, and where they have strong core supplier management capabilities in place. The approach can be applied at several levels. At its simplest, joint planning can involve aligning on metrics and value sharing agreements. At its most advanced it can include joint investment to create new sources of value.

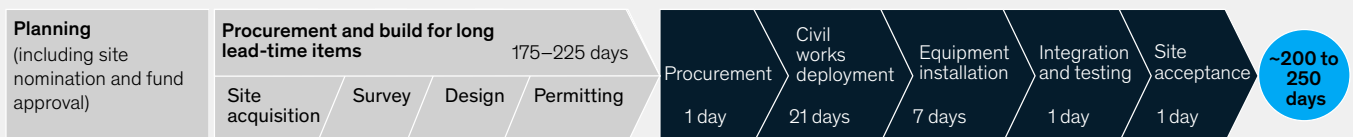
Exhibit

### A telco used zero-based design to cut cycle time by more than 50 percent.

#### Traditional process



#### New process (for implementation within 6 months)



<sup>1</sup> Assumes 6 working days in a week; ~5 weeks in calendar days.  
Source: Zero-based design workshop

between buyers and supplier sales teams, or suppliers and buyer R&D functions—were strong, wider cross-functional engagement was patchy and poorly managed at best.

Improving cross-functional engagement is a leadership issue. Organizations with the most successful collaboration programs use a formal approach to manage cross-functional teams, with clearly defined roles and responsibilities on both sides of the partnership, backed by changes to internal incentive systems to promote full participation in collaboration projects.

Some companies, such as P&G, have taken a step further in creating cross-functional teams solely focused on joint innovation with suppliers. By creating a practice of “open innovation”, P&G aimed to coordinate its efforts and leverage the skills and interests of people throughout the company to assess the competitive landscape, identify types of innovation that can help develop disruptive ideas, and identify appropriate external partners. For innovation to work, P&G has stressed the need to integrate cross-functional teams that, in turn, integrate business strategy with operations—which requires a broad network of interactions.

### **Value creation and sharing**

The pursuit of shared value is the reason buyers and suppliers take part in collaboration projects, so unsurprisingly procurement executives consider it the most important dimension of their collaboration efforts. Yet few participants in our study track the impact of collaboration on sources of value beyond cost reductions. Where companies have tracked the impact of collaboration projects on revenues, margins, or other metrics, they have done so only for a handful of high-profile projects.

For buyers, additional volume remains the most common way that the extra value created by collaboration projects is shared. Some partnerships had made use of other types of value sharing, such as performance-based incentives for suppliers. Where these approaches were employed, both buyers and suppliers were happy with the results. That suggests significant opportunity

for companies to expand their use of such approaches, provided they can reach agreement on cost baselines and incentive structures.

Cost transparency is a critical enabler here. Some companies have found cleansheet cost modeling to be a very effective way to conduct fact-based discussions on costs and improvement opportunities with their collaboration partners (see sidebar, “Cleansheet cost modeling”).

ASML, a lithography-equipment manufacturer for the semiconductor industry, operates a value-sharing mechanism for its suppliers. The company allows suppliers to maintain healthy margins (as a volatility buffer), provides financing for the infrastructure needed to make its products, and offers staggered purchase guarantees. In this way, ASML incentivizes and rewards its strategic suppliers for prioritizing its business, gains access to cutting-edge technology, and reduces costs and improves stability in an industry with short lifecycles affected by substantial swings in demand.

Throughout its long history of collaboration with suppliers, P&G has used a wide range of commercial models to partner with suppliers across the entire R&D chain. Its value-sharing models range from shared fund pools for codevelopment of products to licensing agreements for commercialization. The flexibility to employ different mechanisms has allowed P&G to tap into supplier innovation without the need to overinvest in the development of deep partnerships with every potential collaborator.

### **Organization and governance**

Like cross-functional engagement, the organization and governance of supplier-collaboration programs suffers from a lack of formal structures and processes. Interviewees admitted that their companies, both buyers and suppliers, were relatively lax in tracking and valuing their supplier-collaboration efforts. Few organizations had done anything to align the incentives of project participants within their

## Cleansheet cost modeling

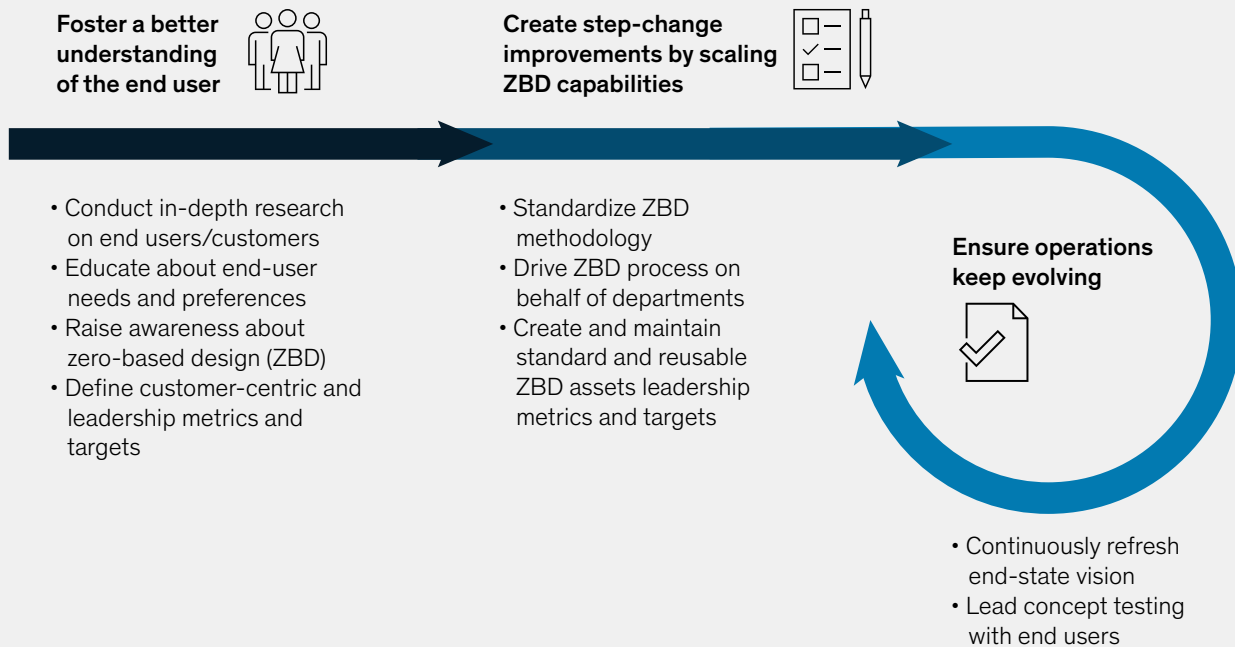
Many of the potential sources of value targeted by supplier-collaboration efforts depend upon a mutual understanding of the true costs of a product or service. Achieving that sort of transparency can, however, be difficult in buyer-supplier relationships. Suppliers may be reluctant to reveal too much about their own manufacturing processes and costs, fearing that this information will be used against them in negotiations, and buyers may not want to let suppliers know just how critical they are.

Cleansheet cost-modeling approaches have risen to prominence in recent years as a tool to allow an open, fact-based cost discussion between buyers and suppliers. A cleansheet calculates the cost of each step during the creation of a product, component, or service, using a database of information on the materials, labor, factory space, equipment, time, and energy required to complete each step—and the implications for the desired product volumes on the utilization of those resources.

Cleansheet cost transparency helps collaboration partners generate ideas for design and process improvements. The approach can also underpin value-sharing agreements, allowing organizations to establish clear cost baselines and measure improvements against them.

Exhibit

### A zero-based design center of excellence oversees a range of activities.



own organizations, and most relied on informal mechanisms to share feedback or review progress with partners.

Introducing a clearer governance structure for the overall supplier-collaboration program and for individual projects has the potential to significantly improve outcomes in most organizations. Two-way scorecards, for example, allow buyers and suppliers to let each other know if they are effectively supporting the goals of the program. Governance of collaboration projects should be cross-functional, with appropriate incentives introduced throughout the organization to encourage full participation and ensure both parties pursue long-term win-win opportunities, not just short-term savings.

Several leading organizations have created supplier advisory boards to provide high-level support and guidance for their supplier-management and supplier-collaboration programs. These boards act as a forum for the supplier base to advise on key issues and collaborate with the organization to further its business agenda. Companies use their supplier advisory boards to help manage risks and disruptive threats to the supplier ecosystem, and such boards also serve as a neutral space for the exchange of ideas between the host company and a group of strategic suppliers (see sidebar, “Supplier advisory boards”).

Toyota has been a prominent example of supplier collaboration, whose success can be explained in part by the use of clearly defined targets and supplier-performance metrics. These are built into contracts that hold suppliers accountable for continued improvements in quality, cost, and delivery performance. The company governs supplier relationships using a steering committee, staffed with relevant senior stakeholders from both organizations, to define the scope and objectives of the collaboration, review progress, and take action to remove roadblocks and resolve issues as they arise.

---

The Supplier Collaboration Index has already revealed several major opportunities for companies seeking to expand and improve their supplier-collaboration efforts. Some of those opportunities are quite straightforward, such as more proactive management of cross-functional teams involved in collaboration projects, or the introduction of formal governance systems to manage those projects. Others, such as greater cost transparency between buyers and suppliers, or the use of performance-based supplier-incentive mechanisms, may require more time and effort to achieve.

Excelling at supplier collaboration requires a more active and engaged working relationship with suppliers. It also calls for a change in mindset, encouraging both buyers and suppliers to commit to the long-term pursuit of value from their collaborative relationships. We end with eight steps that any organization can take to put its collaboration efforts on the right track.

1. Start by identifying those suppliers that offer unique joint opportunities to create and retain significant value.
2. Align strategically with these partners to define joint objectives and develop a compelling business case for both parties.
3. Adopt a methodical and structured approach to define the scope, pace and targets for joint projects, including a clear methodology on how to measure value creation.
4. Define simple, clear value-sharing mechanisms, and align incentives of the cross-functional team accordingly.
5. Invest in allocating the appropriate resources and building the required infrastructure to support the program.

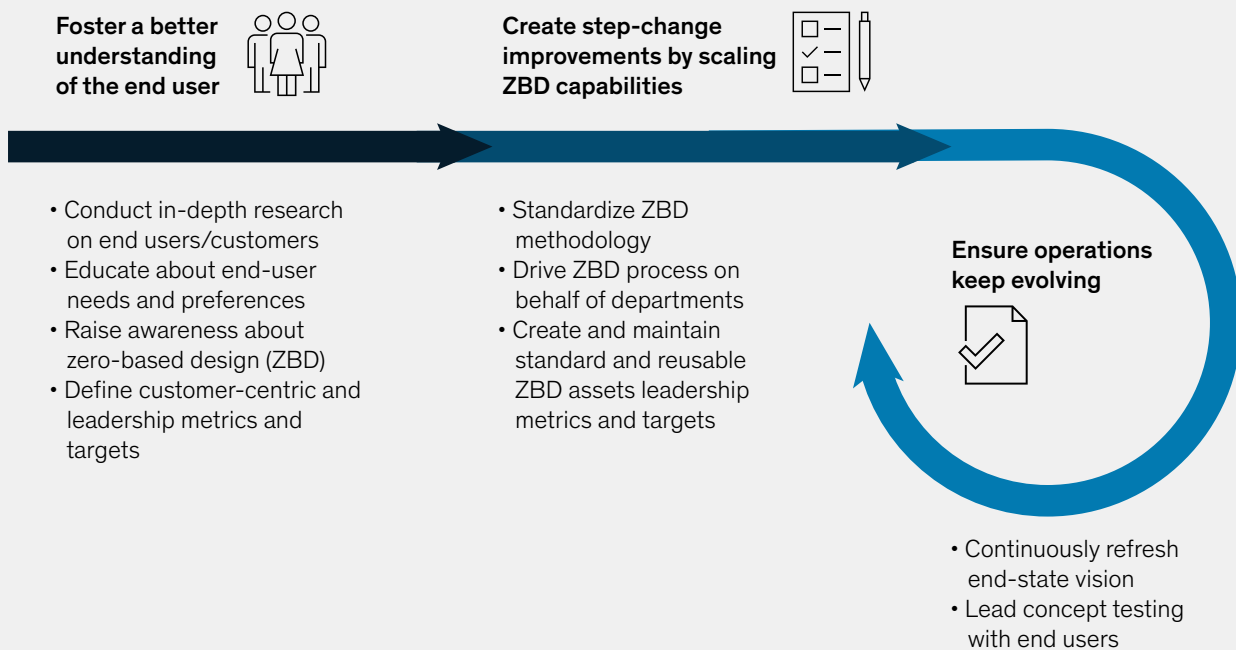
## Supplier advisory boards

A **supplier advisory board** (or council) serves as a neutral and collaborative forum for the exchange of ideas between the host company and a group of strategic suppliers. Such boards are widely used by companies with mature procurement organizations, and they do so for a variety of reasons. A board may advise on key industry trends, risks, and potentially disruptive threats in the supplier ecosystem. Or they may provide a place for companies to explore the potential impact of business decisions on sourcing strategy. Some boards act as a hub for projects to improve operational processes between the company and its suppliers. Others are assembled to support special projects, such as joint innovation programs or sustainability initiatives.

An advisory board is usually chaired by an executive business sponsor and sourcing lead. Buyer-side members include representatives of multiple functions, such as marketing, legal, and R&D. On the supplier side, companies usually nominate a lead strategic supplier, along with around a dozen supplier board members chosen from the strategic supplier base. Those suppliers are selected after evaluation against a matrix of criteria determined by the objectives of the board.

Exhibit

**A zero-based design center of excellence oversees a range of activities.**



6. Create a governance model focused on performance, implementation tracking, and hardwiring supplier collaboration into core operational processes.
7. Foster a culture founded in proactive communication, transparency, consistency, and knowledge sharing, to strengthen long-term partnerships.
8. Invest in building world-class organizational capabilities to ensure sustainability over time

For any organization seeking to improve the performance of its procurement practices, supplier collaboration can no longer be considered a nice-to-have. As companies reach the limits of conventional purchasing practices, further progress will require a new approach based on close relationships, cross-functional engagement, and the shared pursuit of new value.

**Agustin Gutierrez** is a partner in McKinsey's Mexico City office; **Ashish Kothari** is a partner in the Denver office, **Carolina Mazuera** is a consultant in the Miami office, and **Tobias Schoenherr** is the Hoagland-Metzler Endowed Professor of Purchasing and Supply Management at Michigan State University.

The authors wish to thank Pat Mitchell for his contributions to this article.

Copyright © 2020 McKinsey & Company. All rights reserved.



February 2021  
Copyright © McKinsey & Company

[www.mckinsey.com](http://www.mckinsey.com)

 @McKinsey

 @McKinsey