



# COVID-19

**A digital technology agenda driving an accelerated transition to the new normal**

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## Executive summary

At the time of this writing, the global number of COVID-19 cases has surpassed 4 million and the death toll is approaching 300,000 lives.<sup>1</sup> The global economy is expected to shrink by ~ 2.2% in 2020 instead of growing by 2.5%.<sup>2</sup> Economic growth in the United States and Europe is forecast to plunge by 9.1% and 5.8% respectively this year. This far exceeds the impact of previous crises like the SARs epidemic and the 2008 financial crisis, extending beyond the scope of even the most robust scenario planning.

Despite the significant challenges across industries and organizations alike, this crisis also presents opportunities for evolution acting as a springboard driving the digital transformation. A huge uptick in digital initiatives is seen in various industries and across the value chain. Exponential technologies can play a leading role in the digital transformation allowing businesses to gain a competitive edge over their peers, increasing not only operational resilience, but enabling flexibility through the crisis and in a new reality characterized by rapidly changing market dynamics.

A strategic, digital technology agenda driving the accelerated transition to the new normal should therefore focus on three key imperatives:

- 1 Leveraging new technologies to enable remote collaboration and increase operational transparency, cost efficiency and overall business resilience
- 2 Embracing digital-first business and customer engagement models to take advantage of the new reality
- 3 Pursuing partnerships and M&A in crisis-resilient, high growth vertical technology sectors and horizontal markets to expand digital capabilities and boost innovation

The technology sector, in particular, has historically proven resilient with the ability to protect profitability and recover steadily following downturns. A strong digital strategy and adopting exponential technologies can provide the framework and tools necessary to innovate, transform and counter the greatest challenges facing organizations today. Business leaders that act now can minimize the impact of the crisis on their operations and equip their organization to capture new digital business opportunities in the future. Now is the time to accelerate your digital and technology transformation agenda.

<sup>1</sup> World Health Organization as of May 12

<sup>2</sup> United Nations

# COVID-19's impact on industries

COVID-19 has been a rapidly moving situation with widespread impact across the global economy and effects felt in all industries and organizations. Both consumers and businesses are altering their behaviors in previously unimaginable ways. Many of the behavior shifts are expected to persist beyond the pandemic. Long-term, COVID-19 will force significant changes in business and operational ecosystems from increasing the need for transparency and cost efficiency to accelerating digital and technology transformation.

Driven by the current level of uncertainty, many industry verticals will experience a slowdown.

**Exhibit 1** shows the anticipated business impact by industry due to COVID-19. Demand for medical supplies, certain foods and other B2C goods has increased. However, workforce availability, production stops and point of sale closures have caused tremendous negative impact to sectors such as manufacturing, retail and transportation. On top of this, reliance on global supply chains adds a further issue.

Manufacturing production, for instance, fell ~6% in March (greater than the recession in 2008). The crisis has also caused a steep decrease in aerospace and defense, automotive (~40% in US) and electronics production. Similarly, COVID-19 has caused significant changes to the retail landscape due to shutdown with a general decline of 26% in March compared to the same period in 2019.<sup>3</sup>

On the other hand, healthcare will experience a less detrimental impact due to the high demand for medical equipment and supplies. But even that sector is experiencing significant pressure to innovate and contain the COVID-19 outbreak and collateral health effects. Public services such as education and government will experience a negative impact due to the immense transition to remote work and demands on services. Within TMT, the technology sector has remained resilient – as it has historically with the ability to protect profitability and recover following downturns. Telecommunications, similarly, is stable but entertainment and media has been hit.

**Exhibit 1:** Impact on industries: overview



Source: Strategy& analysis, PwC analysis

<sup>3</sup> Global Data

# A technology agenda driving the transition to the new normal

Business leaders must respond and adapt to the crisis in a strategic and structured way. Ensuring safety of the workforce and maintaining continuity of operations must take priority. It is also critical to manage costs and ensure liquidity amid uncertainty in the short-term. Beyond this, it is paramount to redefine future services, business and operating models to adapt to the new reality.

Considering these priorities, business leaders need to steer a digital and technology agenda for their organization enabling the accelerated recovery and transition to the new normal, which requires a focus on three major imperatives. Organizations can digitally accelerate their recovery through the crisis and gain a competitive edge in the new normal by:

(1) leveraging new technologies and migrating to digital platforms that enable remote

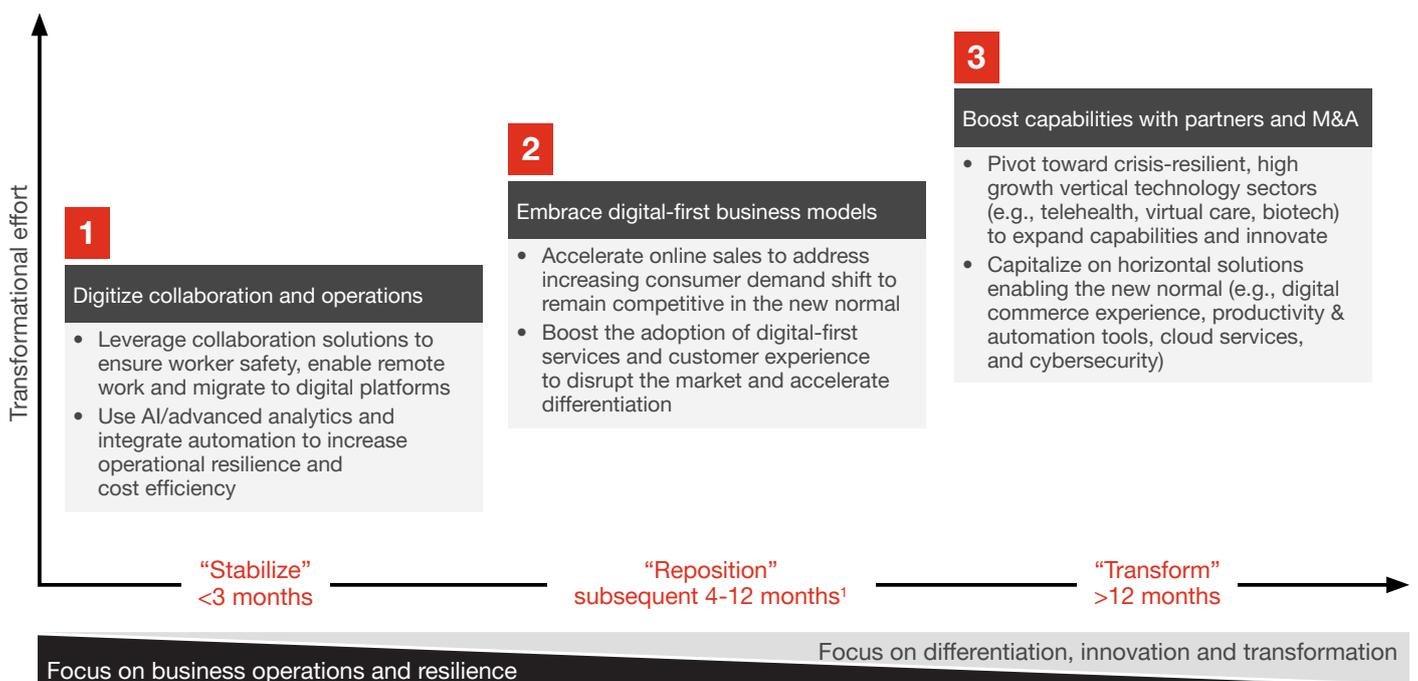
collaboration and increase business transparency, operational resilience and overall cost efficiency,

(2) boosting the adoption of enhanced digital-first sales, business and customer engagement models to take advantage of the accelerated online shift and,

(3) pivoting toward crisis-resilient technology sectors and partner ecosystems to expand digital capabilities and innovation (i.e. vertical solutions like telehealth and edtech as well as horizontal solutions like digital commerce enablement, cloud & managed services, productivity & automation tools and cybersecurity).

**Exhibit 2** provides a high-level overview of an exponential technology agenda to accelerate the transition to the new normal.

**Exhibit 2:** A digital technology agenda toward the new normal



<sup>1</sup> Following lockdown  
Source: PwC analysis

# Digitize offices, remote collaboration and operational resilience

## Enabling seamless remote work and collaboration

On a recent earnings call, Alibaba CEO Daniel Zhang told investors that, while a tremendous challenge for society, COVID-19 also gives people a “chance to try a new way of living and new way of work”.

In fact, putting health and safety above mid-term economic growth, the world’s biggest remote work experiment has been initiated by COVID-19 almost overnight. The levels of remote working have skyrocketed during the lockdown and are expected to remain higher than pre-crisis levels. Currently, ~90%<sup>4</sup> of firms globally have permitted employees to work from home, in comparison to approximately 5%<sup>5</sup> in the European Union prior to the pandemic. Collaboration platforms such as DingTalk, Slack, WeChat Work and Zoom are now used by millions of firms and corporate users leveraging team chat groups and tele-/video-conferencing features as well as file-sharing and document-editing capabilities.

COVID-19 is a forced opportunity like no other requiring businesses to consider future collaboration and service delivery. Lockdowns, although limiting person-to-person contact, are amplifying project reviews and workshops with global teams to digitalize every aspect of business from product information and initial customer outreach to after-sale support and services.

## Augmenting security capabilities to prevent and manage cyber attacks

A shift to remote working and prioritizing business operations has brought immediate and higher risks as security controls may not be applied to new systems or as tools are hastily built to support employees working from home. Reliance on remote access systems may make organizations more vulnerable to distributed denial of service (DDOS) attacks. U.S. agencies warn of a sharp increase in cybersecurity attacks and scams, designed to steal personal information, trade secrets and other data including possible treatments or vaccines related to COVID-19, along with a surge in ransomware attacks on medical facilities.

## Leveraging predictive analytics to address cashflow, liquidity and supply chain flexibility

Post-crisis, demand recovery is unpredictable, uneven across geographies, sectors and customer segments. At the same time, companies face the painful need to right-size the cost base and capital of their operations and organizations overall.

Gaining visibility and control over cashflow and working capital is paramount to maintaining operations. Organizations can leverage advanced analytics to conduct internal and external scenario modelling to gain deeper insight into managing working capital, inventory and assessing CAPEX requirements.

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<sup>4</sup> Gartner

<sup>5</sup> Eurostat



At the same time, advanced analytics can support the identification of cash management inefficiencies and monitoring of cost reduction initiatives such as rationalizing general and administrative (G&A) expenses such as finance, accounting, human resources or procurement. This analysis also enables a deeper view of headcount and can help institute policies encouraging and rewarding cost containment.

COVID-19 is hitting the heart of many global supply chains and causing consequences that are difficult to comprehend. In the short-term, it is important to leverage new capabilities that advanced analytics provides for better supply chain visibility, business modeling and rapid response (e.g., purchasing, inventory capacity and delivery, demand-variation and new regulatory information). The application of advanced analytics can help companies get a sense of their customers' needs without having to walk the factory floor. Automating processes can further drive productivity and mitigate risk (e.g., industrial or warehouse robotics and electronic data interchange).

Mid-term, advanced analytics combined with machine learning (ML) and advanced algorithms can quantify the impact of the crisis on the supply chain and enable detailed risk assessments in real-time. ML also enables modeling of alternative logistics scenarios such as rerouting or alternate sources. IoT sensors in combination with blockchain's distributed ledger provide end-to-end visibility throughout the supply chain and transportation network. Intelligent algorithms can be applied to large data sets for demand sensing and inventory optimization. Beyond this, organizations can conduct longer-term scenario analysis to understand both financial and non-financial operational implications.

Converging smart products and operations will position organizations to better anticipate and adjust quickly to future disruptions, while also unlocking potential new revenue streams.



**Thoughts to consider:** How is your organization leveraging advanced analytics to gain deeper insight over cashflow and working capital and into supply chain impacts? Does your team have the in-house expertise and data sources to benefit fully from these analytical capabilities and insights in supply chain and wider functions?



### Applying automation and robotics to increase cost efficiency and enable accuracy

The capabilities of automation and chatbots have been overhyped the past few years. But first movers in industries like financial services, healthcare, and retail have adopted the technology in smart ways for specific applications, harnessing advances in natural language processing and artificial intelligence, to reduce repetitive, manual tasks and offer guided, personalized experiences to consumers. Essentially, these industries are repurposing automation to apply to a wider base of applications.

Reusable code and functionality are helping enterprises deal with massive spikes in volumes of calls, emails and forms. The replicated skills cover tasks such as reading, categorizing, routing, prioritizing, responding and consolidating. Enterprises can reconfigure the codes to quickly address massive peaks and atypical working conditions. In financial

services, for example, cross-functional AI platforms have been deployed for tasks such as document digitization, email management, and automated exception resolution.

Especially during a period of high operational pressure and changing production levels, the accelerated adoption of flexible robotics, additive manufacturing, and other automation tools can improve the efficiency of standard processes and speed up output levels and shift product mix at reasonable cost. Robotic process automation solutions can help in achieving higher productivity (i.e. 2 to 6 times the productivity of a human worker) by enabling highly accurate data entry (i.e. less errors than humans), taking over repetitive tasks and freeing up personnel capacities for value-adding activities (e.g., strategic analyses, performance improvement measures).



**Thoughts to consider:** How has your organization benefitted from automation across G&A and operational functions during this time? Have you built the trained workforce, external technology partner ecosystems, and management muscle to deliver on the digitization and automation potential across all parts of the value chain of your organization?

## Anticipated technology investments

Due to demand pressures, many organizations will be compelled to accelerate their digital transformation agenda in the near-term while others will likely shift their transformation efforts to a longer-term focus. Overall and across industries, greater investments are expected

in cybersecurity, cloud and collaboration services, AI/advanced analytics, automation, and IoT.<sup>6</sup> **Exhibit 3** highlights COVID-19 driven technology investment trends by industry and the anticipated technology investment areas to maintain or to accelerate.

**Exhibit 3:** Technology investment by industry

COVID-19 impact: ● High ○ Low Investment impact: ⬆️ Positive ⬇️ Negative ⬇️ Flat

Industry	Technology investment trend		Expected technology investment areas (non-exhaustive)							
	Short-term	Long-term	Operations/Supply chain					Business model innovation		
			Impact	Automation	AI/AA	Cloud	Cybersecurity	IoT	Impact	Vertical specific technology
Automotive	⬇️	⬆️	●	✓	✓	✓	✓	✓	●	- Advanced mobility services (e.g., rental/sharing, multimodal) - Connected car; auto customer solutions; data monetization
Chemicals	⬇️	⬆️	●	✓	✓	✓	✓	✓	●	- Digital commerce and services - Analytic-based pricing and product development
Consumer goods and retail	⬇️	⬆️	◐	✓	✓	✓	✓	✓	◐	- Algorithmic retailing; chatbots - Online shopping experience incorporating AR/VR
Energy	⬇️	⬆️	◐	✓	✓	✓	✓	✓	◐	- Energy platforms; smart Grid - Analytics/IoT driven pricing
Financial Services	⬇️	⬆️	◐	✓	✓	-	✓	-	●	- Integrated payments, B2B payments; next-gen POS - Digital banking & robo-advisor; wealth tech; insurtech
Healthcare	⬆️	⬆️	●	✓	✓	✓	✓	✓	◐	- Remote health diagnosis, prescriptions, treatment support - Wearables; contact tracing and digital health data
Industrial manufacturing	⬇️	⬆️	●	✓	✓	✓	✓	✓	●	- AI powered next best actions, data monetization - IoT models (e.g., subscription, outcome, asset sharing)
Pharma and life sciences	⬆️	⬆️	●	✓	✓	✓	✓	✓	◐	- E-pharma/online pharmacy - Wearables digitizing medical records
Public services (e.g., Gov, Education)	⬆️	⬆️	◐	✓	✓	-	✓	-	◐	- Education technology, online education - Contact tracing, surveillance and computing platforms
TMT	⬆️	⬆️	◐	✓	✓	✓	✓	-	◐	- Solutions enabling secure, smart and efficient collaboration - Automation, cloud and managed services, BPaaS
Transportation	⬇️	⬇️	●	✓	✓	✓	✓	✓	●	- Smart urban mobility services; mobility & ride hailing apps - Blockchain powered transportation & logistics ecosystems

AI/AA: Artificial intelligence and advanced analytics  
Source: Gartner, PwC analysis

Within healthcare delivery organizations, for example, higher pressure on operations has increased the need for transparency and efficiencies, which can be enabled by advanced analytics and automation. Additionally, investments in remote health diagnosis, online prescriptions, treatment support solutions are expected to accelerate with digital health solutions being at the forefront to provide excellence in medical services in the new normal. To capture critical health data and track the spread of pandemics like COVID-19, healthcare organizations are expected to increasingly invest in IoT, geospatial location, and track and trace solutions, which will drive up the demand for sensor technology, applications, and related services.

Massive demand changes, variations in reopening schedules, and part and resource

unavailability have severe implications for the manufacturing sector. This means manufacturing firms must reevaluate their operations, focus on business continuity and optimize costs across entire supply chains. Manufacturers are expected to invest in AI/ advanced analytics to gain deep supply chain visibility and run simulations or scenario analysis to understand the implications of changing circumstances. Similarly, many industrial companies are investing in IoT to devise safety strategies, improve collaboration with suppliers, manage inventory, optimize procurement, and maintain equipment. These remote capabilities will allow industrial companies to adapt to the new normal by reducing costs, enabling physical distancing, and shifting to more flexible operating models.

<sup>6</sup> HFS Research



# Accelerate to digital-first business and customer engagement models

## Increasing shift to online sales

Post-crisis, the digital expectations of customers and partners will have reached a new level and many organizations will still face insurmountable digital gaps in relation to their competitors.

The lack of open physical stores and consumers throughout the past few months has made the “unmanned supermarket” concept more relevant now than ever. While the full implications of COVID-19 are still unknown, the impact on retail is already significant and could accelerate the transition to digital stores.

Last quarter, Chinese online vegetable deliveries increased by 600%<sup>7</sup> and online grocery sales grew by 215%<sup>8</sup>, while U.S. online grocery order volume increased by more than 200%<sup>9</sup>. E-commerce in Italy has increased 81%<sup>10</sup> in the first week of March compared with the last week of February.<sup>11</sup>

Although digital commerce continues to go mainstream, there are still numerous items people prefer to buy offline. Post-crisis, however, online shopping for groceries could become the norm as consumers’ short-term behaviors during the pandemic become permanent. With offline shopping halted, companies’ strategies will need to focus on invigorating their digital commerce presence and, possibly, building an online business. Digital technologies and connected products will increasingly be relied on to understand and anticipate customer behaviors and preferences to provide more valuable customer engagement.

## Taking the digital leap to digital-first customer service and experience

COVID-19 is predicted to accelerate the leap to digital services and online experience. Before the crisis, for example, real estate had been moving toward digital services for both tenants and landlords. Players that have invested in digital sales and leasing processes (e.g., virtual viewing platform such as Redfin’s AR/VR solution) will allow potential residents to find homes more quickly and effectively.

Similarly, there will be an increase in adoption of digital and contactless payments, voice-enabled mobile banking applications, and robo-advisor-powered services. Digital banking interactions, for instance, have risen to 90% during the crisis, from 10% before, with no drop-off in quality, an increase in compliance while providing improved usability and customer experience.

In the U.K., less than 1% of initial medical consultations took place via video link in 2019. Under lockdown, nearly 100 % are occurring remotely. Remote health diagnosis and prescriptions solutions (e.g., KRY, an app-based service that allows patients to schedule online video visits with doctors) will increase speed and efficiency of medical operations, providing staff with more time to address urgent needs and allowing patients to receive high-quality care.

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<sup>7</sup> Carrefour, year-over-year during Lunar New Year

<sup>8</sup> JD.com, year-over-year from January to February

<sup>9</sup> Rakuten intelligence, March 12-15

<sup>10, 11</sup> GDOweek

# Pursue partnerships and M&A to boost digital capabilities and drive innovation

Partnerships and M&A can be a way for companies to close digital gaps, which have been exacerbated by the crisis. Partnering with or acquiring firms with strong and complementary digital offerings or capabilities can enable faster recovery and a competitive boost in digital innovation and value creation.

## Partnering and building ecosystems to bridge digital innovation gaps

COVID-19 has accelerated a shift in corporates' understanding of the nature of competition and the benefits of new collaboration models. Where building digital expertise and platforms in-house is not feasible at speed and scale, partnering and joining ecosystems of market peers and technology providers can provide the necessary capabilities to deliver innovative digital products and services, substantially improve customer experience and increase sector competitiveness.

### Retailers partner with AR/VR providers to improve digital commerce experience

Established technology providers and startups are helping brands and retailers boost their digital commerce platforms across areas such as shopper targeting, merchandising, and order fulfillment as well as AI-based personalized recommendations and replicating the physical store experience online.

A French start-up, Diakse, has incorporated AR/VR into the online shopping experience, creating a unique and tailored visit for each consumer thanks to insights gleaned through advanced analytics. The firm has reported a 400% increase in time consumers spend on its sites and a 27% increase in consumer activity. Similarly, Obsess, which provides an AR/VR platform, has partnered with brands such as Farfetch, Levi's, and Tommy Hilfiger, and claims that conversion rates can increase up to 70% from using its services.

### Life science stakeholders build partnerships with market peers and tech providers

Life science players, such as Johnson & Johnson and Pfizer, formed partnerships to help develop testing, vaccines, and medical equipment by leveraging each other's respective expertise. Similarly, Pfizer, BioNTech, a German biotech firm, and Fosun Pharma have launched clinical trials for a COVID-19.

Should alliances such as these lead to successful research and development efforts and clinical trials, it is likely this form of collaboration will continue beyond the crisis.

### Public sector joins forces with Big tech on surveillance and computing platforms

Big tech has joined forces with the public sector to track the spread of COVID-19. The data and computing capabilities of these major technology companies enable solutions and platforms that can be easily scaled. Apple and Google, for example, have partnered to develop a contact tracing platform that aims to notify users if they have been in contact with a virus carrier.

The way in which Big tech firms address the COVID-19 crisis and how consumer data is managed will determine the role of these incumbents in future crisis response.

### Healthcare and pharma collaborate with Big tech firms

Healthcare and pharma can leverage the deep technology expertise of Big tech firms by applying this domain knowledge to innovate in the healthcare sector and address the massive increase in demand for powerful, digitally enabled medical services.

For example, Apple has immersed itself in the wearables and digital health data market with its electrocardiogram-equipped Apple Watch in digitizing medical records. Aiming to improve patients' lives holistically, the firm has created software leveraging machine learning to monitor how people live and to subsequently provide personalized preventative care guidance.

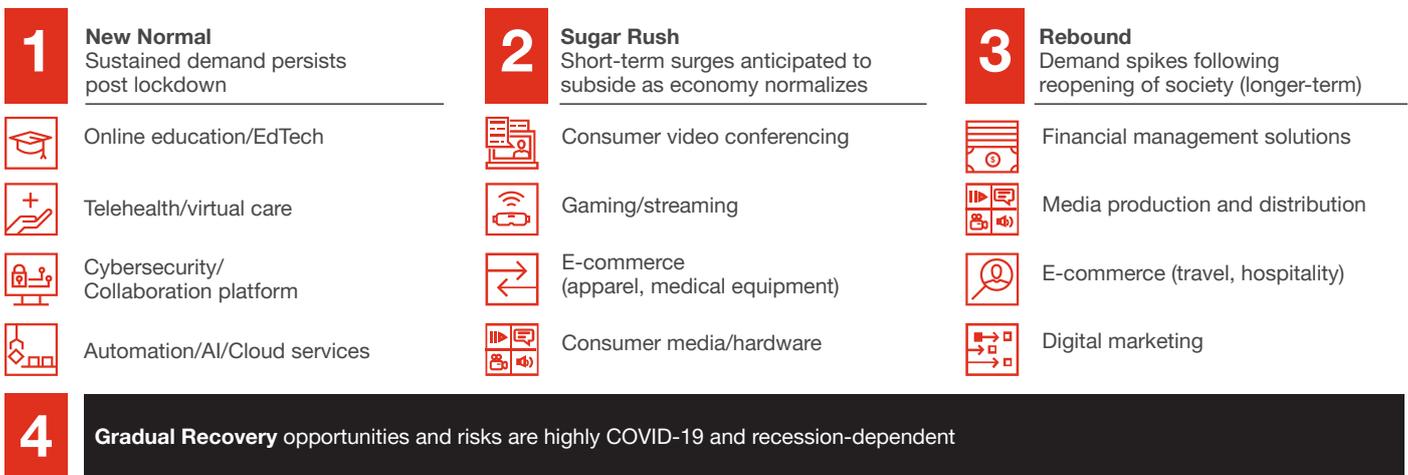
## Creating new digital businesses in high growth sectors

Business leaders can view the crisis as an opportunity to outmaneuver their peers and the new wave of technology competition by taking advantage of digital M&A. Less impacted organizations with cash on hand have the potential to build up digital capabilities and fill innovation gaps via acquisition of technology assets.

Acquiring or launching a new digital business is a highly complex process driven by the unprecedented market complexity and COVID-19 impact. To identify attractive opportunities in high growth technology enabled sectors, corporates need to decode and understand demand trends and drivers for digital solutions and map those to sectors recovery trajectories.

Our economic models and business signals analysis suggest that there are very different levels of COVID-19 impact, and we anticipate four different recovery trajectories across over 4,000 technology subsectors: New Normal, Sugar Rush, Rebound, and Gradual Recovery (see Exhibit 4). While many industries will follow the “Gradual Recovery” path seen in prior downturns, other markets will take unique trajectories given the extraordinary responses to this crisis. For example, telehealth or virtual care will be part of the “New Normal” where demand has surged during the lockdown and will likely continue beyond it. Similarly, the “Sugar Rush” path characterizes technology sectors that have experienced a surge during lockdown but, in contrast to the “New Normal,” are likely to see demand retract or return to long-term trends after stay-at-home restrictions loosen. “Rebound” markets will fall in the lockdown but spike in the recovery due to pent-up demand.

**Exhibit 4:** Four different recovery scenarios in the technology sector



Source: Strategy&, PwC Emerging & Growth Tech Market and Asset tracker database covering over 4,000 subsectors

Business leaders looking to acquire or create new digital businesses should focus on robust business models and attractive assets within technology subsectors characterized as the “New Normal” and “Rebound”. Digital health,

biotech, fintech, edtech, digital commerce, collaboration, productivity, automation, cloud and cybersecurity platforms currently present some of the most attractive opportunities.



**Thoughts to consider:** How can corporate M&A capitalize on the growing opportunities and identify the most attractive assets supporting the primary use cases? How can private and public organizations attain innovation and increase competitiveness through an ecosystem of partners around Big tech, regional tech players and startups? How to address concerns about accountability and privacy in these partnerships going forward?



## Headwinds today, but exponential opportunities tomorrow

The world's biggest problems today could be the world's biggest business opportunities tomorrow. COVID-19 has disrupted the way companies operate and the avenues through which traditional services are delivered. Both the digital expectations of consumers as well as B2B customers have reached a new level, and many organizations are facing overwhelming digital gaps in relation to their competitors.

As necessity drives innovation, new digital business models are accelerating, and we are witnessing the application of innovative solutions and higher reliance on technology-enabled work and operations. It is paramount for business leaders to steer a digital technology agenda that drives their organization's transition to the new normal. Secure remote work and collaboration, AI/advanced analytics-driven and automation-supported operations and services

will allow companies to optimize business processes more efficiently, become more resilient, and enrich offerings provided to customers.

Companies that accelerate through this digital transition swiftly and intelligently by capitalizing on the benefits that exponential technology provides can minimize the crisis' impact on their operations. Furthermore, they can be ready to capture new business opportunities that only digital technologies enable.

What are your thoughts, ideas and the opportunities around digitizing your organization? Which digital capabilities or technologies lie within your company to innovate your business and processes? How will your company transform, partner or create a new digital business in the new normal?

# Endnotes

## PwC resources

PwC Strategy& - COVID-19 Economic Scenarios and Impact  
PwC TMT Perspective Report  
PwC UK – COVID-19 – Tech Considerations for UK clients  
Restart Deutschland  
PwC Strategy& – Private Equity and Digitization – The Hidden Equity Story  
PwC Deals Emerging, Growth and Disruptive Tech Market Sector Analysis  
Managing the Impact of COVID-19 on Cybersecurity

## Market data

CB Insights: Automation/Chatbots, Biotech, Collaboration tools, Cybersecurity, EdTech and others  
Gartner Coronavirus (COVID-19) Resource Center Primer for 2020  
Global Data Coronavirus Executive briefing  
HFS Research  
IDC COVID-19 – Factoring the Impact on Industry  
IoT Analytics

## Other sources

European Centre for Disease Prevention and Control  
European Patent Office  
Eurostat  
Fierce Healthcare  
GDOWeek  
International Labor Organization  
Ministry of Health and Welfare (Korea)  
United Nations

## Company websites

Curevac  
KRY  
SolidLine  
Zillow

# Acronyms

<b>AI</b>	Artificial intelligence	<b>IoT</b>	Internet of Things
<b>AR</b>	Augmented reality	<b>IT</b>	Information technology
<b>B2B2C</b>	Business to business to consumer	<b>M&amp;A</b>	Mergers and acquisitions
<b>BCM</b>	Business continuity management	<b>ML</b>	Machine Learning
<b>Biopharma</b>	Biopharmaceutical	<b>MOOCs</b>	Massive open online courses
<b>Biotech</b>	Biotechnology	<b>NLP</b>	Neurolinguistic programming
<b>CAPEX</b>	Capital expenditure	<b>QR</b>	Quick response code (bar code)
<b>COVID-19</b>	Coronavirus disease 2019	<b>RPA</b>	Robotic process automation
<b>CRM</b>	Customer relationship management	<b>SaaS</b>	Software as a service
<b>E-commerce</b>	Electronic commerce (digital or online commerce)	<b>UV</b>	Ultraviolet radiation
<b>EdTech</b>	Educational technology	<b>VPN</b>	Virtual private network
<b>G&amp;A</b>	General and administrative	<b>VR</b>	Virtual reality
<b>GVA</b>	Gross value added	<b>YoY</b>	Year over year





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