

Scan™ in the Time of Covid-19

Implications of the current pandemic
and its effects

June 2020



Scan™ in the Time of Covid-19

The pandemic seemingly upended markets as we know them. This document features 18 pandemic-related issues and implications that will help decision makers navigate the uncertainties of the years ahead.

On 6 May 2020, staff in Strategic Business Insights' Menlo Park, California; Croydon, England; and Tokyo, Japan, offices discussed and analyzed more than 100 developments and events that relate to the coronavirus and coronavirus disease 2019 (covid-19), identifying societal, political, commercial, industrial, and technological implications of the covid-19 pandemic and its effects.

The current global situation hopefully will see resolution soon—in particular, the hope is that the health-care crisis will pass quickly; however, the covid-19 pandemic's impact will likely be long lasting. Scan will continue to identify pretrend topics and friction areas in marketplaces at an early stage to help decision makers develop awareness of impending changes.

If you have comments or wish to receive additional information, please contact Scan Director Martin Schwirn at mschwirn@sbi-i.com.

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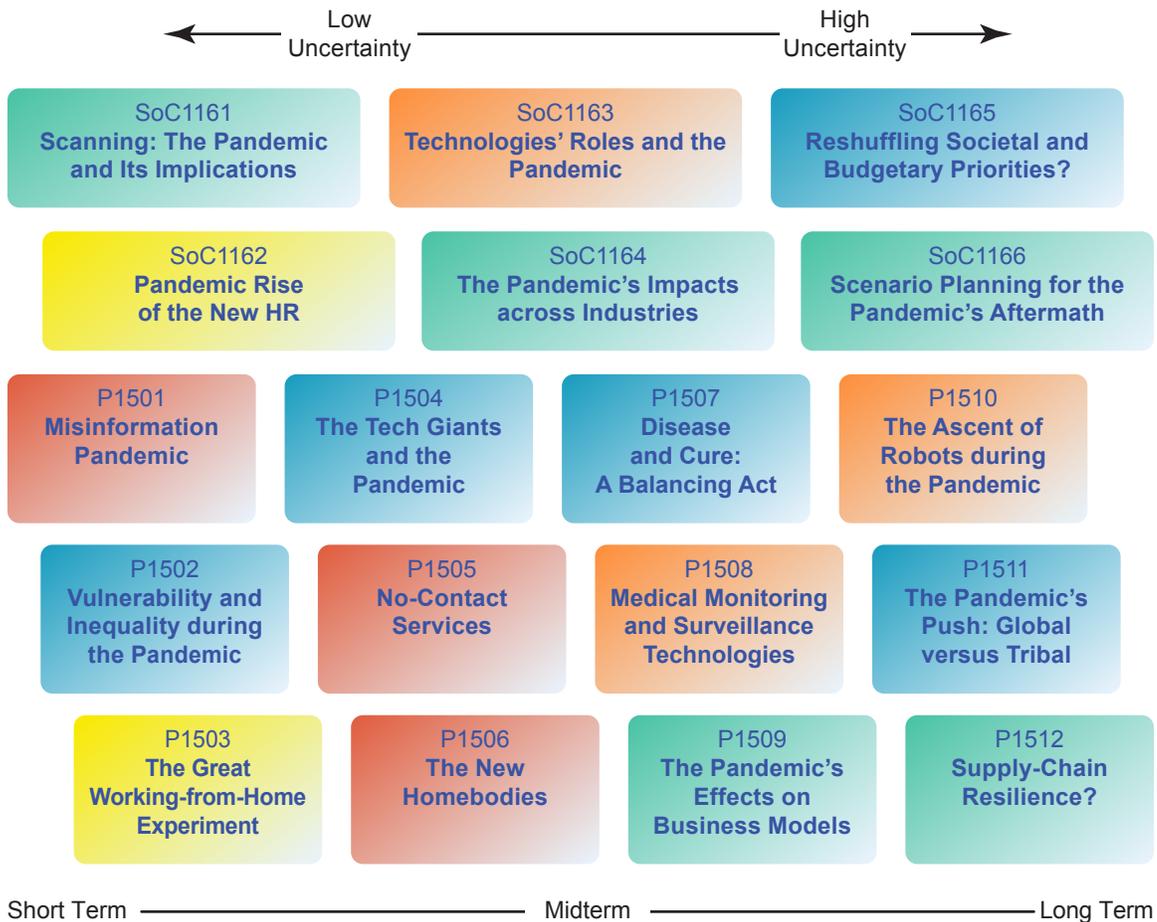
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Strategic Synopsis 126

June 2020

By Martin Schwim (mschwim@sbi-i.com)

Scan Framework



-  Infrastructure: Support, Resources, Market Structure, Legislation
-  Organization: Strategy, Operations, Company Structure
-  Talent: Human Resources, Company Culture, Collaboration
-  Creation: Design, R&D, Materials, Enabling Technologies
-  Marketing: Market Research, Advertising, Distribution, Pricing

June 2020 Signals of Change

SoC1161 — Scanning: The Pandemic and Its Implications

The occurrence of the covid-19 pandemic and the resulting economic slowdown were not unforeseeable.

- The emergence of a new virus in 2019 is a predictable surprise.
- The pandemic introduced new dynamics in the business, political, and societal realms.

SoC1162 — Pandemic Rise of the New HR

Plausibly, the coronavirus and the covid-19 pandemic will lead to long-lasting changes in human-resources (HR) practices.

- The pandemic has forced employers to allow many more employees than ever before to work from home.
- Companies have been looking for ways to develop more flexible workforces for some time.

SoC1163 — Technologies' Roles and the Pandemic

A look at technologies' roles during the pandemic could provide cues about the technologies' uses when the pandemic ends.

- Large tech companies are already in a strong position to weather the impacts of the pandemic.
- Enabling the autonomous or remote performing of tasks could transform various industries.

SoC1164 — The Pandemic's Impacts across Industries

A growing economic crisis is challenging businesses and creating great uncertainty going forward.

- The hospitality, tourism, and travel industries were some of the first industries to experience strong negative impacts from the spread of the coronavirus.
- Amazon and other grocery-delivery-service providers are actually struggling to meet the huge spike in demand.

SoC1165 — Reshuffling Societal and Budgetary Priorities?

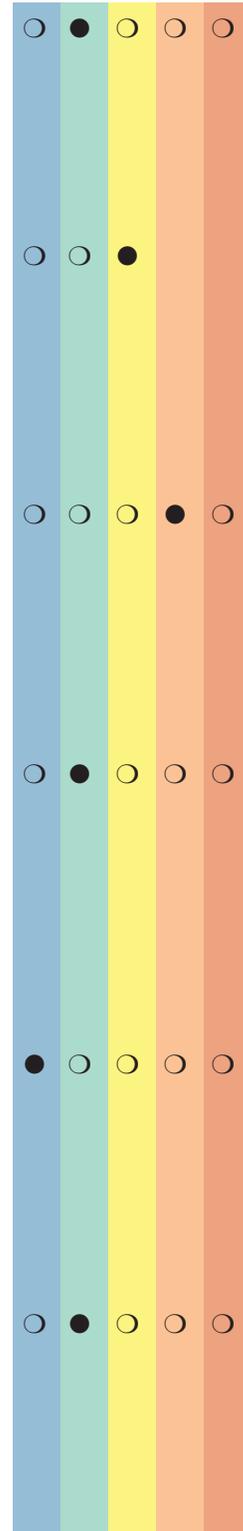
Policy makers will reconsider societal priorities and the allocation of financial resources.

- The covid-19 pandemic could shift nations' opinions about what sectors deserve additional funding.
- Changes in prioritization must go beyond merely shifting money to considering more flexible uses of that money.

SoC1166 — Scenario Planning for the Pandemic's Aftermath

Custom scenario-planning efforts can help decision makers move from gaining awareness of a changing world to preparing for such a world.

- General scenarios remain valuable starting points to trigger strategic thinking.
- Custom scenarios and strategy development are indispensable in preparing companies for the future.



● Most Relevant

○ Relevant

**June 2020 Patterns
(Results of the Scan™ Meeting on 6 May 2020)**

P1501 — Misinformation Pandemic

Like the current pandemic, a wave of misinformation and disinformation has spread around the world.

- Research groups are tracking the flow of and exploring ways to combat the spread of misinformation.
- Researchers are gaining a better understanding of the roles that social-media networks play in informing the public.

P1502 — Vulnerability and Inequality during the Pandemic

The pandemic will not only have a large death toll but also put a spotlight on polarized societies.

- A significant proportion of students lack home access to computers and the internet.
- Companies in several sectors are cutting jobs and implementing furloughs because of the covid-19 pandemic.

P1503 — The Great Working-from-Home Experiment

People are working from home and learning online on a scale that almost no organization planned for.

- Collaboration-tools and online-education providers became two of the few types of companies to benefit from the pandemic.
- Many employees appear to be adjusting well to working from home.

P1504 — The Tech Giants and the Pandemic

Although uncertainties exist, the pandemic could increase the tech giants' influence on digital life.

- The tech giants could emerge from the pandemic stronger than ever.
- The outlook for the tech giants is not all positive, and differences exist among the companies.

P1505 — No-Contact Services

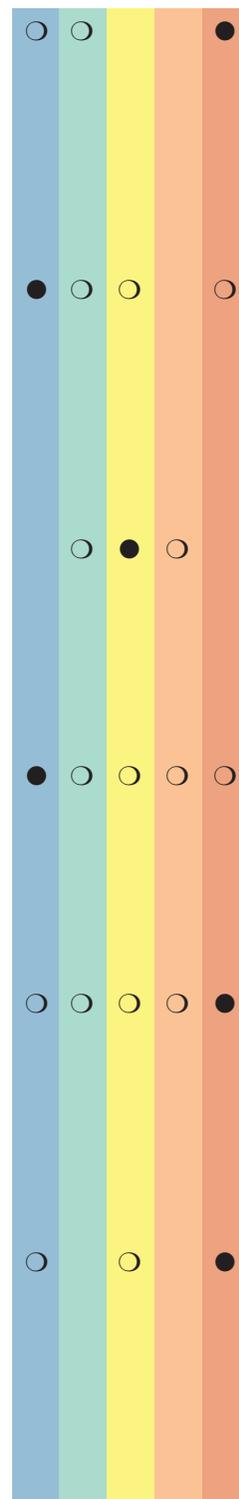
The pandemic is creating opportunities for companies that are operating under the current social-distancing conditions.

- Both Postmates and Instacart have introduced no-contact drop-off services.
- Social-distancing and shelter-in-place measures have influenced consumer-spending habits.

P1506 — The New Homebodies

The pandemic's forcing many people to stay at home is resulting in a variety of behavior changes, some of which may be permanent.

- In New York, New York, animal-welfare organizations are reporting high demand for dog adoptions during the pandemic.
- Many people who are unable to socialize in person are playing video games with others online.



● Most Relevant ○ Relevant

June 2020 Patterns—Concluded

P1507 — Disease and Cure: A Balancing Act

Determining which responses to the pandemic best balanced medical needs and economic considerations will take years.

- Given the economic effects of governments' heavy-handed covid-19 interventions, some observers have called for more measured approaches.
- A strong social-distancing policy may have not only health benefits but also positive economic effects in the long run.

P1508 — Medical Monitoring and Surveillance Technologies

Governments and organizations are using monitoring and surveillance technologies to help manage the spread of the coronavirus.

- Contactless temperature-detection systems are already in use in several major cities in China.
- Tunisia began using Enova Robotics' PGuard security robot to patrol the streets to aid in enforcing the government's lockdown order.

P1509 — The Pandemic's Effects on Business Models

The pandemic could change some business models permanently.

- Many social gatherings have moved to the virtual realm.
- New business models are emerging in health care, retail operations, office work, and education.

P1510 — The Ascent of Robots during the Pandemic

Current lockdown and social-distancing measures are expanding opportunities for service robots.

- In a recent article, an international team discusses the roles that robotics could play during the current and eventual pandemics.
- Several companies are building robots that use ultraviolet light to disinfect surfaces.

P1511 — The Pandemic's Push: Global versus Tribal

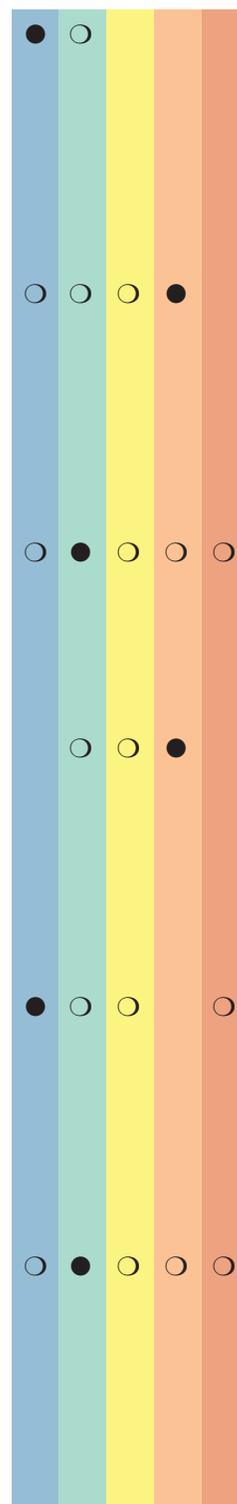
Many reasons exist for increasing global collaboration during the pandemic; however, the opposite might happen.

- Countries need to collaborate, acting in solidarity to develop national responses that will not conflict with one another.
- Many analysts foresee potential developments that will reverse the globalization of past decades.

P1512 — Supply-Chain Resilience?

The early stages of the pandemic highlight the strengths and weaknesses of current-generation global supply chains.

- A lack of parts from suppliers in China resulted in Hyundai Motor Group's suspending operations at its Ulsan, South Korea, industrial complex.
- The covid-19 pandemic is affecting consumer demand, which further complicates logistics operations during the pandemic.



● Most Relevant

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SoC1161

Scanning: The Pandemic and Its Implications

 By Martin Schwirn (Send us [feedback](#).)

The emergence of the coronavirus and coronavirus disease 2019 (covid-19) and the occurrence of the covid-19 pandemic and the resulting economic slowdown were not unforeseeable; People either ignored or simply brushed aside the warning signs during the decade of substantial and continuous growth since the Great Recession. April 2020's [SoC1154 — Life after the Time of Coronavirus](#) dispels the myth that the emergence and spread of the coronavirus is a *black swan*—a term that Nassim Taleb uses in his 2007 book *The Black Swan: The Impact of the Highly Improbable* to refer to an unpredictable large-magnitude event that has major consequences. Business scholars Max Bazerman and Michael Watkins provide a term that is much more suitable for use in describing the rise and spread of the coronavirus: *predictable surprise*. In their 2004 book *Predictable Surprises: The Disasters You Should Have Seen Coming and How to Prevent Them*, Drs. Bazerman and Watkins define a *predictable surprise* as an event (or set of events) that surprises a person or group even though that person or group was aware of all the information necessary to anticipate the event and its consequences. And in their 2015 book *Superforecasting: The Art and Science of Prediction*, Philip Tetlock and Dan Gardner come to the conclusion that many events that people consider black swans are actually gray swans and that black swans are not nearly as wildly unpredictable as many people assume they are.

Two particularly prominent strands of developments and warning signs should have raised concerns about the possibility that a pandemic could occur. First, several disease outbreaks occurred during the past 20 years. Even casual observers will remember many

of these outbreaks. From 2002 to 2004, severe acute respiratory syndrome (SARS), which the SARS coronavirus causes, affected some 29 countries. Between 2009 and 2010, swine influenza (flu)—which multiple strains of the influenza virus, including the influenza A virus subtype H1N1, cause—affected many regions of the world; the World Health Organization (Geneva, Switzerland) declared swine flu a pandemic only after hundreds of thousands of people succumbed to it. Middle East respiratory syndrome (MERS), which the MERS coronavirus causes, broke out in 2012 (additional smaller outbreaks occurred in 2015 and 2018). And these outbreaks are only some of the most prominent flu-related outbreaks (outbreaks of Ebola-virus disease occurred between 2013 and 2016, and outbreaks of Zika-virus disease occurred between 2015 and 2016). Such outbreaks clearly are not exceptions; therefore, the emergence of a new virus in 2019 is a predictable surprise,

not a black swan. Second, many experts issued warnings about the emergence of new pandemics. Most prominently, Bill Gates, cofounder of Microsoft (Redmond, Washington) and the Bill & Melinda Gates Foundation (Seattle, Washington), warned about a deadly pandemic repeatedly during the past decade. In 2010, he warned that “the H1N1 flu strain got a lot of attention in 2009.... The real story is that we are lucky it wasn't worse because we were almost completely unprepared for it” (“A better response to the next pandemic,” *GatesNotes* [blog], 18 January 2010; online). During a TED Conferences (TED Foundation; New York, New York) TED Talk in 2015, Gates underscored his concerns, explaining that “if anything kills over 10 million people in the next few decades, it's most likely to be a highly infectious

The purpose of Scan™ is to capture dynamic interactions in clients' external environment.

virus.... We're not ready for the next epidemic" ("The next outbreak? We're not ready," TED Conferences, 18 March 2015; online). During a radio interview in 2016, Gates spoke with Dame Sally Davies, then England's chief medical officer, and expressed the concern that "we are a bit vulnerable right now if something that spread very quickly like a, say, a flu that was quite fatal; that would be a tragedy" ("Bill Gates: We are vulnerable to flu epidemic in next decade," BBC News, 30 December 2016; online).

Government officials have also highlighted threats to the health of thousands if not millions of people and the global economy. During a pandemic-preparedness gathering at Georgetown University Medical Center (Georgetown University; Washington, DC) in January 2017, Anthony Fauci—the longtime director of the US National Institute of Allergy and Infectious Diseases (National Institutes of Health; Bethesda, Maryland) who has moved into the spotlight during the covid-19 pandemic—warned that "there is no question that there will be a challenge to the coming administration in the arena of infectious diseases" ("Global Health Experts Advise Advance Planning for Inevitable Pandemic," Georgetown University Medical Center, 12 January 2017; online). At the Biodefense Summit that the Office of the Assistant Secretary for Preparedness and Response (US Department of Health and Human Services; Washington, DC) hosted on 17 April 2019, then US National Security Council (Washington, DC) senior director for counterproliferation and biodefense Timothy Morrison made his major concerns clear. Morrison referenced *The Great Influenza: The Epic Story of the Deadliest Plague in History*, John M. Barry's book about the 1918 flu pandemic, explaining that "a couple of lines in here...ring true when I think about what keeps me up at night and what am I really worried about" ("Advancing Biodefense," Office of the Assistant Secretary for Preparedness and Response,

17 April 2019; online). And in September 2019—mere months before the coronavirus first appeared in Wuhan, China—the US Council of Economic Advisers (Washington, DC) released its aptly titled *Mitigating the Impact of Pandemic Influenza through Vaccine Innovation* report.

Clearly, several strong signals of change existed before the coronavirus emerged. Moving forward requires looking at a potentially changed world. The covid-19 pandemic introduced new dynamics in the business, political, and societal realms, and the developments of the past three months accelerated many dynamics that had seen only weak signals of change in past years.

The purpose of Scan™ is to capture dynamic interactions among three areas in clients' external environment: commerce and competition, science and technology, and consumers and society. In the June 2020 Scan set, the Scan team presents the results of the May 2020 Scan Meeting, which focused on and revolved around developments and implications relating to the covid-19 pandemic. [Strategic Synopsis 126](#), the result of the May 2020 Scan Meeting, presents Signals of Change and Patterns about potential developments that will play out across the areas of consideration that the Strategic Synopsis highlights every month: Infrastructure, Organization, Talent, Creation, and Marketing. Some of the developments that the June 2020 Scan set highlights are novel changes that the pandemic introduced; many other developments merely represent accelerations of developments that previous Scan discussions mention (the covid-19 pandemic merely provides the circumstances necessary to drive the adoption and diffusion of new concepts, technologies, and types of business conduct that have been a long time in the making). Please find initial alerts about such developments in the "Signals of Change related to the topic" and "Patterns related to the topic" sections at the end of each Signal of Change and Pattern.

SoC1161

Signals of Change related to the topic:

SoC1166 — Scenario Planning...
SoC1154 — Life after...Coronavirus
The Scan™ Process...

Patterns related to the topic:

P1470 — Tackling Uncertainty
P1400 — Forewarned Is Forearmed
P0913 — Certainty of Uncertainty

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SoC1162

Pandemic Rise of the New HR

By Rob Edmonds (Send us [feedback](#).)

Plausibly, the coronavirus and the coronavirus-disease-2019 (covid-19) pandemic will lead to long-lasting changes in human-resources (HR) practices. As P1503 — [The Great Working-from-Home Experiment](#) notes, the covid-19 pandemic has resulted in a sudden and dramatic scale-up in working from home. This development appears popular among employees: According to a survey of US workers that the Harris Poll (The Stagwell Group; Washington, DC) conducted on behalf of Glassdoor (Recruit Holdings Co.; Tokyo, Japan), 67% of respondents said that if their companies implemented policies requiring indefinite remote working, they would be in favor of working from home indefinitely. This view backs up a March 2019 International Workplace Group (IWG; Zug, Switzerland) survey of US workers, which revealed that 80% of respondents would choose a job that offered flexible working over one that did not.

Before the emergence of the coronavirus, flexible working (including the option to work from home at least occasionally) was already an important factor in attracting talent: The same IWG survey revealed that more than 80% of employers had used flexible working to improve talent retention. But until now, most flexible-working policies still required employees to spend a substantial amount of time in the workplace (for example, an office worker might work at home only one day per week), and flexible working was rarely available to all employees. Senior staff members have almost certainly benefited from flexible-working policies more than other groups have.

The covid-19 pandemic has forced employers to allow many more employees than ever before to work from home—and to do so on a full-

time basis. In many cases, organizations have had to modernize their collaboration-software infrastructure rapidly. Many collaboration-tools vendors—including Microsoft (Redmond, Washington), Slack Technologies (San Francisco, California), and Zoom Video Communications (San Jose, California)—have seen the adoption of their products and services increase rapidly during the pandemic. For the most part, collaboration technology has delivered. This pandemic arrived at a time when consumer broadband connections and conferencing software have finally evolved to a point at which videoconferencing from home is perfectly workable.

Of course, problems have occurred. For example, hackers have been exploiting peoples' concerns by sending out phishing emails that purport to be about the coronavirus, and home-based IT-security employees sometimes lack access to all the cybersecurity tools they would have access

to in the office. Working from home is also a significant challenge for security agencies and other companies that deal with highly sensitive materials.

Despite some challenges, the many working-from-home successes have led commentators to question whether the pandemic could lead to a long-lasting change in working-from-home practices. Planned working-from-home strategies have several advantages for employers. For example, such strategies can see use to attract and retain talent, reduce costs, and enable access to a larger and more diverse pool of recruits (because geography no longer limits potential employees and because working from home can allow people to balance work and other life priorities, such as childcare responsibilities).

Enabling and adjusting to large-scale working-from-home practices are not the only (or

HR could be permanently changed and its art of the possible reset.

the most serious) HR challenges that the covid-19 pandemic has created. Around the world, many companies have seen demand for their products and services collapse overnight, forcing them to reduce payroll costs rapidly. For example, Marriott International (Bethesda, Maryland) furloughed tens of thousands of hotel employees, some two-thirds of its 4,000 corporate employees at its headquarters, and some two-thirds of its corporate employees abroad. Furloughing has enabled companies to scale down rapidly without committing immediately to permanent staff reductions. Even so, some companies have moved from furloughs to layoffs. For example, in the United Kingdom, airlines British Airways (International Consolidated Airlines Group; London, England, and Madrid, Spain) and Virgin Atlantic Airways (Crawley, England) initially made use of a government-backed furloughing scheme but then decided to lay off significant numbers of employees after they determined that travel will not return to normal for several years.

Companies in industries other than hospitality and travel have faced the opposite challenge, finding themselves understaffed as demand spiked. For example, Amazon.com (Seattle, Washington) opened 100,000 full-time and part-time positions to help fulfill a surge in online orders, and Walmart (Bentonville, Arkansas) moved to hire 150,000 additional employees. As the employment market changed, so did incentives. In the United States, Europe, and the United Kingdom, Amazon increased pay for its fulfillment workers. And Walmart announced a bonus pool of \$365 million for employees who work through the covid-19 pandemic (resulting in payouts of \$300 for full-time employees and payouts of \$150 for part-time employees).

To an extent, companies have been looking for ways to develop more flexible workforces for some time. For example, the gig economy utilizes self-employed freelancers rather than employees, and tech firms frequently use large numbers of on-demand internet workers to complete tasks such as data labeling. However, the covid-19 pandemic

has highlighted a more fundamental need for organizations to have the capability to scale up and scale down rapidly in times of crisis.

Rapid staffing scale-ups have also pushed some recruiters to amend vetting and other standard processes. During the covid-19 pandemic, PepsiCo (Purchase, New York) unveiled a plan to hire 6,000 frontline employees and have them start immediately, before the completion of their background checks and drug screenings. Somewhat similarly, the governors of almost a dozen US states—including California, Florida, New York, Texas, and Virginia—took steps to loosen regulations in an effort to encourage retired medical professionals and nursing students to begin working in hospitals. Plausibly, positive results from such efforts could lead to ongoing relaxations in recruitment regulations and practices.

Further HR changes are ahead in the coming year. Phased returns to work, continuing social distancing, ongoing working from home, and new obligations to provide protective gear all require new HR interventions. And when the covid-19 pandemic eventually ends, HR could be permanently changed and its art of the possible reset. Employment markets will likely shift. Many employees have experienced the freedom of working remotely and on their own terms. Top talent will likely be able to call the shots about where, when, and how they work. Some organizations may decide to move to permanent working-from-home arrangements, canceling leases even before employees return to offices. At the same time, furloughs and flexible-employment contracts could become far more common as companies try to smooth demand fluctuations both in normal times and in moments of crisis. And employers may seek to strip away policies and bureaucracy that have slowed recruitment and restricted available talent pools. With these and other changes, the pandemic could significantly shift the dial in standard HR practices.

SoC1162

Signals of Change related to the topic:

SoC1018 — Machine-Based HR
SoC986 — ...Employment in the Future
SoC970 — AI and the Human Cloud

Patterns related to the topic:

P1503 — ...Working-from-Home Experiment
P1323 — Embracing Neurodiversity
P1069 — Catching Up in HR

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SoC1163

Technologies' Roles and the Pandemic

By Guy Garrud (Send us [feedback](#).)

The coronavirus and the coronavirus-disease-2019 (covid-19) pandemic have caused major disruptions that have had impacts across most industries; however, the nature of the disruptions and the severity of their impacts vary wildly, with some companies and services even thriving in the new environment. For example, McKinsey & Company (New York, New York) estimates that in Italy (the first European country to implement a widespread lockdown), e-commerce transactions increased by 81% during the first month of lockdown. But Gartner (Stamford, Connecticut) senior research director Dayna Ford highlights that the e-payments market will likely see a decline in overall revenue in 2020 because losses for e-payment companies that handle big-ticket purchases such as airline tickets and hotel bookings will offset gains for online retail. Tech companies that offer social-media and messaging services have seen a surge in the use of those services. For example, Facebook (Menlo Park, California) reports that in some regions where the covid-19 pandemic had a particularly strong impact, total messaging across its social-networking and messaging platforms and services increased by 50%, with video calling more than doubling. But because Facebook does not monetize its messaging and video-calling services, it is not benefiting financially from their increased use. In fact, Facebook is struggling to keep these services operational and stable while losing revenue as a result of the pandemic's causing decreases in digital-advertising spending wherever lockdowns are in place. A look at technologies' roles during the pandemic could provide cues about the technologies' uses when the pandemic ends.

Facebook is far from alone in experiencing a sudden surge in demand. Indeed, a variety

of large tech companies have suddenly found themselves in a position in which they are playing key roles in people's lives on an unprecedented scale. For example, Amazon.com (Seattle, Washington) has struggled to draw customers to its grocery-delivery business but is now seeing a huge surge of customers who suddenly require grocery delivery. Likewise, videoconferencing services from companies such as Zoom Video Communications (San Jose, California) and streaming-media services from companies such as Netflix (Los Gatos, California) have changed from convenient luxuries into essential parts of people's social and work lives. In many countries, lockdowns are acting to cement the commercial dominance of large tech companies over their traditional brick-and-mortar rivals. Moreover, large tech companies are already in a strong position to weather the impacts of the covid-19 pandemic.

Some technology giants are even positioning themselves to play a critical role in efforts to contain the spread of covid-19. For example, Apple (Cupertino, California) and Google (Alphabet; Mountain View, California) worked together to develop an application-programming interface that authorities in a country or region can use to build contact-tracing smartphone apps. Such apps alert smartphone users when they have come in proximity to someone who later tested positive for severe-acute-respiratory-syndrome coronavirus 2—the coronavirus that causes covid-19. Advanced contact-tracing technology is a potentially vital tool for governments that are seeking ways to reduce social-distancing measures without risking additional surges in infection rates. Various countries have already implemented some version of smartphone-based contact tracing, but China's efforts are noteworthy because they move beyond

The pandemic presents tremendous opportunities in many technology areas.

tracking. A system in China that is seeing a nationwide rollout issues users a health code that determines whether they should be in quarantine or free to travel and enter public spaces. Chinese citizens sign up for the system through Ant Financial Services Group's (Hangzhou, China) Alipay wallet app, and the system relies on big data to determine automatically whether a user is a contagion risk.

China has also been making extensive use of emerging technologies in responding to the covid-19 pandemic. For example, in Chengdu, China, some officials wear smart helmets that measure the temperatures of nearby people to identify individuals who have a fever, which indicates a possible coronavirus infection. Other technologies in use in China's response to covid-19 include facial-recognition cameras that use AI-based fever-detection software, drones that make use of thermal cameras, and robots—for example, Pudu Technology (Shenzhen, China) has adapted its catering robots to assist medical staff in hospitals. Autonomous delivery vehicles are also playing a significant role in China. Alibaba Group Holding (Hangzhou, China) and other online retailers have ordered hundreds of autonomous delivery vehicles from Neolix Technologies Co. (Beijing, China). The 1-meter-wide vehicles have 2.4 cubic meters of cargo space and are seeing use to transport medical supplies while spraying disinfectant onto street surfaces. The pandemic is creating huge opportunities elsewhere for other companies that have been developing similar types of autonomous delivery robots.

In a recent *Science Robotics* article, an international team comprising researchers from Shanghai Jiao Tong University (Shanghai, China), the Swiss Federal Institute of Technology in Zurich (ETH Zurich; Zurich, Switzerland), Texas A&M University (College Station, Texas),

and several other institutions discusses the important roles that robotics could play during the covid-19 pandemic and other pandemics the world may eventually face. The team highlights that workshops that two science agencies of the US government hosted during the 2015 Ebola outbreak identified three areas in which robotics can have a positive effect during a disease outbreak: clinical care (including decontamination and telepresence for doctors), logistics (including transportation of contaminated waste), and reconnaissance (including monitoring of people's following quarantine guidelines). The team argues that the current pandemic has added a fourth area: continuity of work and socioeconomic functions. According to the team, the pandemic's effects on manufacturing and commercial activities around the world justify more research into remote operation and how remote operation can serve a wide range of applications. This fourth category has both the highest short-term demand and the greatest potential for long-term disruption. Enabling the autonomous or remote performing of tasks could transform various industries by giving companies massive talent pools to draw from, potentially even making possible the recruiting of skilled engineers and other professionals for operations across international borders.

In various ways, the covid-19 pandemic presents tremendous opportunities in many technology areas. However, the eventual impact that technologies will have hinges on two key unknowns. First, how long will the pandemic necessitate societal disruptions such as social distancing? Second, will technologies that saw adoption as a necessity during the pandemic see ongoing use when the pandemic ends? In any case, large tech companies may find themselves in a potent position to capitalize on and potentially shape the new normal.

SoC1163

Signals of Change related to the topic:

SoC1154 — Life after...Coronavirus

SoC1117 — Medical Robots

SoC1094 — Automation on Top...

Patterns related to the topic:

P1460 — Automation's Effects on Labor

P1361 — Automated Craftsmanship

P1325 — Automating Service Tasks

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SoC1164

The Pandemic's Impacts across Industries

By David Strachan-Olson (Send us [feedback](#).)

The coronavirus and the coronavirus-disease-2019 (covid-19) pandemic are affecting the global economy and industries in myriad ways. A growing economic crisis is challenging businesses and creating great uncertainty going forward. Although the covid-19 pandemic is challenging all businesses, the significant societal shifts the pandemic is causing are creating opportunities for some organizations.

The hospitality, tourism, and travel industries were some of the first industries to experience strong negative impacts from the spread of the coronavirus. Travel advisories quickly turned into travel bans and immigration restrictions. Within a few weeks, air travel—particularly international air travel—decreased in an unprecedented way. In the United States, the Transportation Security Administration (US Department of Homeland Security; Washington, DC) reported that the number of air travelers on 8 April 2020 was 96% lower than the number of air travelers on the equivalent day in 2019.

Estimates suggest that the covid-19 pandemic has resulted in a 60% decrease in global flight traffic. Airlines now face challenges in preparing hundreds of planes for long-term storage and finding places to park thousands of planes for months.

Airline-traffic declines, lockdown measures, and widespread remote work are affecting the global oil and energy industries. Many oil producers continued strong production even as the impacts of the covid-19 pandemic began to diminish demand, which resulted in an oversupply of oil. Companies are moving excess oil supplies into storage facilities, but some regions have minimal access to storage. In what is a historic event (albeit an artifact of commodities investment), West Texas Intermediate (a grade of oil that sees use as a benchmark in pricing oil)

crude-oil-futures contracts for May 2020 delivery went negative, closing at $-\$37.63$ per barrel on 20 April 2020. And early in the pandemic, the Organization of the Petroleum Exporting Countries (OPEC; Vienna, Austria) was in a price war with Russia that kept oil production up and lowered oil prices. This price war threatened many US shale-oil producers. More recently, Russia, OPEC, and other oil producers reached a deal to cut back oil production. Oil producers also face long-term uncertainty as some countries choose to invest in green energy as part of economic-recovery efforts. For example, the European Union has committed to making its economic-stimulus plans green and digital.

The covid-19 pandemic is also having significant impacts on the automotive industry.

Delays in shipments of parts and components are disrupting the just-in-time method in use in automakers' manufacturing operations. For example, very early on in the pandemic, a lack of parts from suppliers

in China resulted in Hyundai Motor Group's (Seoul, South Korea) suspending operations at its massive Ulsan, South Korea, industrial complex, which comprises five factories and manufactures 1.4 million vehicles every year. Other automakers have had to shut down manufacturing facilities because of regional lockdown measures. And although automakers are anxious to restart their assembly lines, the continuing economic uncertainty the pandemic has caused appears to be reducing vehicle sales significantly. Some automakers reported that new-vehicle sales were between 40% and 50% lower in March 2020 than they were in March 2019. Continuing economic uncertainty and unemployment could prolong the slump of new-vehicle sales. In response, automakers are beginning to adjust financing

The societal shifts the pandemic is causing are creating opportunities.

terms by, for example, lowering interest rates and lengthening loan terms.

Companies in most industries are struggling during the covid-19 pandemic; however, companies that provide digital services and platforms are mostly continuing their ongoing businesses, and some such companies are even thriving. The rapid shift to employees' working from home has forced many companies to expand their use of collaboration tools significantly, resulting in colossal increases in the number of subscriptions to and the use of collaboration tools and services from companies such as Zoom Video Communications (San Jose, California), Slack Technologies (San Francisco, California), and Microsoft (Redmond, Washington). Companies that provide online-learning platforms—for example, Coursera and Khan Academy (both Mountain View, California)—have reported significant increases in their platforms' use as schools around the world remain closed and students must stay at home. Streaming services and other online-entertainment platforms have also seen increases in use and revenue.

Digital platforms for e-commerce and local grocery and meal delivery are also seeing substantial increases in use because of the covid-19 pandemic. Amazon.com (Seattle, Washington) has struggled to convince customers to use its grocery-delivery business for some time but is now benefiting from a huge surge of people who suddenly need grocery delivery. Amazon and other grocery-delivery-service providers are actually struggling to meet the huge spike in demand and looking to hire new contractors quickly. Similarly, meal-delivery-service providers such as Grubhub (Chicago, Illinois) and DoorDash (San Francisco, California) are seeing massive increases in sales volumes as in-restaurant-dining bans remain in place and residents must remain at home as

much as possible. However, increased use of meal-delivery services is also raising awareness about the high fees the service providers charge restaurants (often 20% to 30% of the cost of each order). Several cities—including San Francisco, California, and New York, New York—are considering capping or have already capped these fees to between 5% and 15% of the cost of each order during the pandemic to minimize the services' negative impacts on restaurants.

The impacts of the covid-19 pandemic and their economic effects are too numerous to list in detail, but they are affecting every company and industry in some way. As the pandemic continues, additional impacts emerge. The rapid switch in food-consumption habits—people's switching from eating meals from restaurants and other commercial kitchens to eating home-cooked meals—is straining the food-supply chain. Many farmers are having to dump staggering amounts of produce and milk because commercial demand has dropped and packaging facilities are at capacity. Some professional-sports organizations are trying e-sports alternatives to real-world sports events that cannot take place because of the pandemic. For example, Formula One (Liberty Media Corporation; Englewood, Colorado) and the National Association for Stock Car Auto Racing (NASCAR; Daytona Beach, Florida) are broadcasting e-sports competitions in which professional drivers compete in virtual races. Animal shelters are quickly emptying as people who are stuck at home rush to adopt and foster animals. And cities such as Paris, France, and Oakland, California, are leveraging the current reduction in vehicle traffic to close some streets to vehicles completely, thereby giving bicyclists and pedestrians more space for social distancing. Companies will face a variety of new challenges as governments begin permitting businesses to reopen with new operational rules.

SoC1164

Signals of Change related to the topic:

SoC1157 — Coronavirus...Tracking
SoC1154 — Life after...Coronavirus
SoC1021 — ...Industry's Looming Challenges

Patterns related to the topic:

P1495 — Climate Concerns...Opportunities
P1482 — Supply-Chain Risks
P1460 — Automation's Effects on Labor

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SoC1165**Reshuffling Societal and Budgetary Priorities?**By Martin Schwirn (Send us [feedback](#).)

SoC1154 — *Life after the Time of Coronavirus* and SoC1161 — *Scanning: the Pandemic and Its Implications* highlight that the current coronavirus-disease-2019 (covid-19) pandemic should not have been the surprise that many media outlets and politicians seem to have found it. Indeed, this pandemic was just waiting to happen. But health-care systems around the globe have been, to varying degrees, unprepared to deal with this situation. Arguably, many other societal and economic needs took priority over pandemic preparation. New York University (New York, New York) Leonard N. Stern School of Business professor Scott Galloway believes that after the pandemic subsides, the world will look very different from how it looked before the pandemic. Many experts would agree, but Galloway focuses on the pandemic's resulting in the potential reallocation of budgetary resources. Because of the covid-19 pandemic, policy makers will reconsider societal priorities and the allocation of financial resources.

Galloway argues that the stakes are high: Throughout human history, pathogens have killed more people than have wars and violence. His main argument is that people will realize that even personal wealth cannot shield them from the effects of a pandemic (or climate change, for that matter). Given the high stakes, societies will consider setting new priorities and will likely decide to change budgets according to these new priorities. This line of thinking will strike a chord with many people who have been experiencing various effects of the covid-19 pandemic for the past few months. In fact, although saving lives and protecting people's health is the dominating concern, concerns about the proper use of financial resources also exist. For example, a lack of health-care equipment and medical personnel is likely prolonging the effects

of the pandemic. The US government's budget proposal for 2021 allocates some \$700 billion for the US Department of Defense (Arlington County, Virginia) and less than \$100 billion for the US Department of Health & Human Services (Washington, DC). This comparison does not include all the allocations that affect the defense and health-care sectors, but these numbers offer a glimpse of the nation's current priorities. The ratios of national funding for the defense and health-care sectors will differ among countries, but most countries will prioritize military expenses as the United States has. The covid-19 pandemic could shift nations' opinions about what sectors deserve additional funding.

Andrew Winston—coauthor of *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build a Competitive Advantage*—argues that the covid-19 pandemic will lead to a more global outlook: “Pure nationalism is frankly dangerous in the face of borderless issues like climate

change, resource overuse, and, yes, pandemics. On some level, we're only as strong as our weakest immune systems” (“Is the COVID-19 Outbreak a Black Swan or the New Normal?” *MIT Sloan Management Review*, 16 March 2020; online). Such weakest-link considerations could trigger resource-allocation changes that aim to make global public health, supply chains, and environmental efforts more robust and resilient. The possibility exists that markets and societies will reconsider priorities and perhaps even perceive their priorities as global issues that require intense international collaboration.

The pandemic provides a very good example of why considering the weakest links across and within countries is so important. If a country lacks a functioning health-care system with the resources necessary to serve the vast majority

Societies will consider setting new priorities.

of the country's population, any outbreak of a contagious disease can become a pandemic. And if a country cannot reduce the spread of a disease within its borders, the disease and its effects will eventually have an impact on other countries. In fact, one could argue that countries should view the spread of a disease in another country as a domestic issue, sending financial and material resources to that country to stop the spread of the disease at its source. Such thinking will require not only a new way of allocating budgets but also a new understanding of the division of domestic and foreign-support budgets. Changes in prioritization must go beyond merely shifting money to considering more flexible uses of that money.

Such a reorientation in the health-care sector could very well become a starting point for taking a new look at priority setting more generally. Weak links similar to those in the area of health exist in the area of environmental efforts within and across countries. For example, if a region depends on coal mining, the financial and employment needs of this region can hold hostage the entire country the region is in (unless substantial budgetary allocations enable the reorientation of this region). If this country then uses coal to a substantial degree as a result—as many countries in the Americas, Asia, and Europe still do—the outsize use of fossil energy and the resulting carbon dioxide emissions will hamper the environmental efforts of all other countries. This scenario shows that regions can become weak links for global efforts. Again, reprioritization, reallocation, and increased flexibility of budgetary considerations could become important policy aspects moving forward.

The covid-19 pandemic's impact on environmental budgets and efforts has been a point of discussion in recent months. On the one hand, many regions—particularly regions in China and India—have seen dramatic pollution relief as industries have come to a virtual standstill. On the other hand, the current economic situation will likely require a focus on economic growth

rather than on environmental considerations for the rest of 2020 and possibly even beyond. But the drastic actions that governments, companies, and individuals have taken within a few weeks to reign in the spread of the virus have also set a precedent for what is possible. May Boeve, executive director of climate-advocacy group 350.org (New York, New York), highlights that “we’ve seen that governments can act, and people can change their behavior, in a very short amount of time.... And that’s exactly what the climate movement has been asking governments and people to do for years” (“What would happen if the world reacted to climate change like it’s reacting to the coronavirus?” *Fast Company*, 10 March 2020; online). But what is theoretically possible is not necessarily what will see prioritization. A need exists to balance economic and environmental goals, but achieving this balance can be challenging. For example, the European Union aims to become a carbon-neutral region by 2050, but using stimulus packages in efforts to overcome the negative impacts of the covid-19 pandemic has created economic challenges to achieving this environmental goal. During a 26 March 2020 session of the European Parliament, Jos Delbeke—a former senior European Commission official who has played a substantial role in much of Europe’s environmental legislation—stated that no stimulus package should contain provisions that work against the European Union’s environmental goal. In this case, budgetary prioritization means balancing multiple needs to ensure that economic and environmental goals align.

Many regional, national, and global weak links exist. Policy makers who are dealing with the covid-19 pandemic might rethink some priorities and how to address such weak links in a variety of areas, including rare-metal mining, plastic production, water use, and food consumption and waste.

SoC1165

Signals of Change related to the topic:

SoC1148 — Food Security...
SoC1147 — Climate Change...
SoC1143 — Medical...Hopes...and Concerns

Patterns related to the topic:

P1483 — Stakeholder Purpose...
P1473 — The Military-Tech-Sector Complex
P1470 — Tackling Uncertainty

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SoC1166

Scenario Planning for the Pandemic's Aftermath

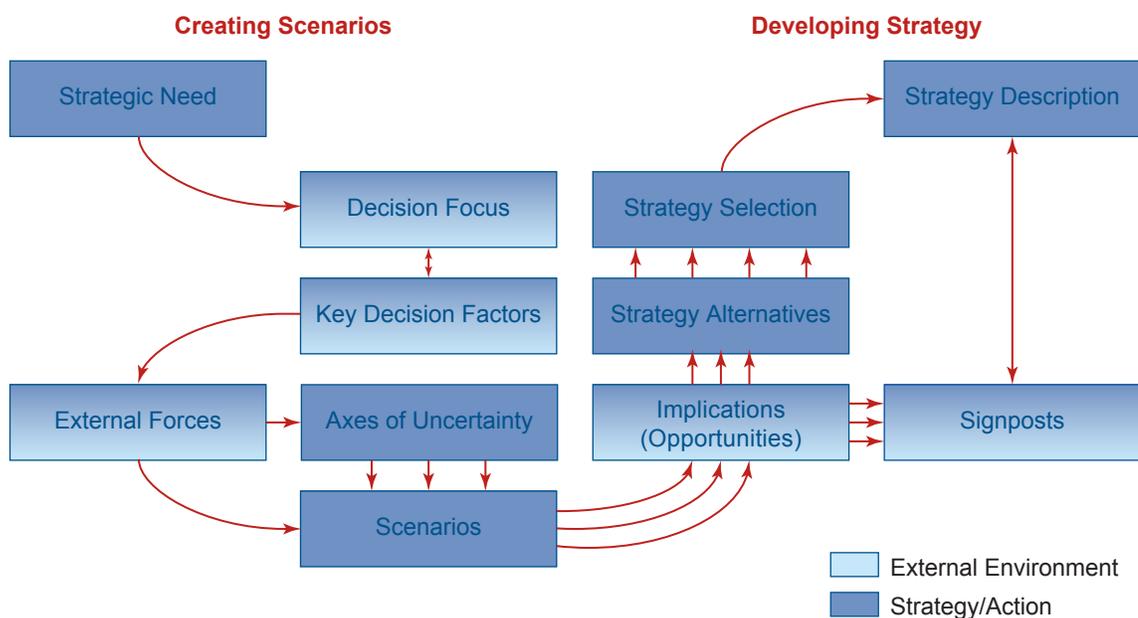
By Martin Schwim (Send us [feedback](#).)

May 2020's SoC1154 — *Life after the Time of Coronavirus* points to the use of scenarios to understand what changes the coronavirus-disease-2019 (covid-19) pandemic might bring. But general scenarios fail to address individual strategic and decision-making needs—the individual needs that make every industry and every company within every industry unique. General scenarios offer a coarse outlook that can aid in developing an understanding of the range and magnitude of potential challenges moving forward. But only customized scenario-planning efforts can help decision makers move from gaining awareness of a changing world to preparing for such a world in

ways that will enable them to weather the changes and thrive in a new commercial and societal landscape.

Strategic Business Insights' (SBI's) scenario-planning service has a framework that illustrates the steps and requirements of building narratives about potential futures (scenarios) that guide decision makers' thinking and strategy development. In the context of SBI's framework, general scenarios represent overviews that look at axes of uncertainty and related scenarios and therefore tackle only a sliver of decision-making needs. Axes of uncertainty represent the major considerations that pandemic-related scenarios have to take into account. In the context of the

Full Scenario-Planning Process



Source: SBI

covid-19 pandemic, many researchers look at, for instance, the axes of global versus local, economic recovery versus ongoing recession, and health-care challenges versus health-care advances.

SoC1154 discusses the look that futurist Sohail Inayatullah and consultant Peter Black took at how the future might play out. On the basis of the analysis of hundreds of published documents, they developed four distinct future scenarios: a disaster scenario, a respite scenario, a progress scenario, and a gloom scenario. Similarly, a German think tank recently looked at the covid-19 pandemic's effects on the economic and societal landscapes and developed four distinct scenarios: an isolation scenario, a collapse scenario, a tribal-structures scenario, and an adjustment scenario. In the isolation scenario, individuals and countries keep a distance from one another; traveling has become difficult, and participating in public events requires health checks. In the collapse scenario, the coronavirus has caused the world to enter a permanent crisis, and national interests trump global considerations. In the tribal-structures scenario, local economies thrive, and people focus on small circles of friends and family. Finally, in the adjustment scenario, global society is learning from the crisis and emerges strengthened.

These scenarios outline plausible futures that decision makers might have to deal with; however, they represent extreme outcomes, and the actual future will likely be somewhere in between or a mixture of them all to various degrees and within certain ranges. For instance, a world of tribal structures would work for only certain products and services. Seeing how car manufacturing and shipbuilding could become truly local affairs is difficult. And such shortcomings point to the limitations of general scenarios: They can neither reflect the needs of particular companies nor provide guidance for such companies' decision makers. In reality, decision makers require scenarios that take their specific business, industry, and markets

into consideration. A one-size-fits-all approach does not allow effective strategy development. General scenarios merely provide an idea of what challenges might lie ahead for many companies and are shortcuts to understanding what issues may require addressing.

In contrast, the framework of SBI's scenario-planning service not only produces scenarios with deeper and more textured narratives but also supports strategic decision-making that focuses on the needs and markets of the decision makers' companies. Companies must first decide what their strategic need is and what the resulting and related decision focus will be. For example, in reacting to the covid-19 pandemic, does a company want to establish more robust operations (including the logistics of supply chains) to weather future crises more effectively, or does it want to take advantage of the current disruption to acquire competitors in an effort to create more comprehensive product portfolios? Clearly, these two strategic needs will lead to scenarios that look at very different factors. But a scenario is a look at the marketplace, not a strategic response. The entire right side of SBI's framework then guides decision makers through a process that results in a custom strategy. After developing and gaining an understanding of scenarios, companies will have to put themselves into these worlds, consider implications and response alternatives, and create robust and flexible strategies that address their situations in the context of potential future worlds that the covid-19 pandemic might create.

General scenarios remain valuable starting points to trigger strategic thinking and to provide the awareness that strategic responses are necessary to deal with changes in the economic and societal landscapes. But customized scenarios and strategy development are indispensable in preparing companies for the future that will emerge, given all the uncertainties that lie on the pathway to this future.

SoC1166

Signals of Change related to the topic:

SoC1161 — Scanning...
SoC1154 — Life after...Coronavirus
SoC885 — Uncertain Predictability...

Patterns related to the topic:

P1482 — Supply-Chain Risks
P1470 — Tackling Uncertainty
P0913 — Certainty of Uncertainty

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P1501

Misinformation Pandemic

 By Sean R. Barulich (Send us [feedback](#).)

Like the current pandemic, a wave of misinformation and disinformation has spread around the world.

Abstracts in this Pattern:
[SC-2020-05-06-086](#) on Stanford University

[SC-2020-05-06-083](#) on content moderation

[SC-2020-05-06-037](#) on ISI Foundation

[SC-2020-05-06-049](#) on University of Washington

Organizations and research groups are tracking the flow of and exploring ways to combat the spread of misinformation. For example, researchers at Stanford University's (Stanford, California) Stanford Internet Observatory analyzed posts across multiple social-media platforms to identify how misinformation and conspiracy theories about the coronavirus and coronavirus disease 2019 (covid-19) worked their way into messaging by US and Chinese officials. For example, in March 2020, Zhao Lijian, deputy director of the Information Department of the Ministry of Foreign Affairs of the People's Republic of China (Beijing, China), used Twitter's (San Francisco, California) social network to post tweets implying that the coronavirus originated in the United States and that the US military brought the virus to Wuhan, China. These false narratives seem to have appeared on multiple social-media platforms as early as January 2020. Twitter and other social-media-platform operators have established new content-moderation policies to address misinformation about the coronavirus and covid-19. For example, Twitter recently deleted tweets by president of Brazil Jair Bolsonaro because his tweets propagated misinformation—specifically, they encouraged ending social-distancing measures and advocated the use of

antimalarial drug hydroxychloroquine to treat covid-19.

Researchers are gaining a better understanding of the roles that social-media networks and media outlets play in informing the public when a disease outbreak occurs. For example, researchers at the Institute for Scientific Interchange Foundation (ISI Foundation; Turin, Italy) looked at the correlation between media coverage and public attention to the 2015–16 Zika-virus-disease epidemic. The researchers found that views of Zika-related pages on Wikipedia (Wikimedia Foundation; San Francisco, California) nearly synchronized with outbreak-related news coverage. This research suggests that individuals may seek out online sources of information in response to pandemic-related news. Some research groups have already launched research centers that focus on fighting misinformation. For instance, in December 2019, the University of Washington (Seattle, Washington) launched its Center for an Informed Public, which aims to “resist strategic misinformation, promote an informed society, and strengthen democratic discourse” (www.cip.uw.edu). Researchers at the center are trying to understand how misinformation is spreading.

Signals of Change related to the topic:
[SoC1103](#) — Dynamics in Fake News

[SoC1024](#) — Social Media's Reckoning?

[SoC1023](#) — Social Responsibility in Business

Patterns related to the topic:
[P1457](#) — Content Controversies

[P1369](#) — Fake Visuals

[P1227](#) — Understanding...Fake News

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P1502

Vulnerability and Inequality during the Pandemic

 By Madeeha Uppal (Send us [feedback](#).)

The pandemic will not only have a large death toll but also put a spotlight on polarized societies.
Abstracts in this Pattern:

[SC-2020-05-06-031](#) on remote learning
[SC-2020-05-06-052](#) on heat wave

[SC-2020-05-06-099](#) on domestic violence
[SC-2020-05-06-015](#) on housing

As the coronavirus-disease-2019 (covid-19) pandemic sweeps the globe and countries and cities implement various measures to slow the spread of covid-19, the lopsided effects across socioeconomic groups are becoming apparent. UNESCO (United Nations Educational, Scientific, and Cultural Organization; Paris, France)—an agency of the United Nations (New York, New York)—estimates that 363 million students around the world are facing school and university closures. Many schools are organizing online classrooms and remote-learning arrangements; however, because a significant proportion of students lack home access to computers and the internet and libraries are shut because of lockdowns, some students will fall behind in their schoolwork. The closure of libraries and other communal spaces such as malls also prevent people who lack home air conditioners from using such spaces to stay cool during heat waves—a situation that is especially problematic for residents of low-income urban areas. Summer is approaching in many countries, and the past few years have seen hotter-than-average summers.

Many cities in lockdown because of the covid-19 pandemic are experiencing increases in domestic abuse and violence. In the United

States, for example, the number of domestic-violence arrests in Portland, Oregon, was 27% higher between 12 and 23 March 2020 than it was during the same period in 2019. And the number of domestic-violence reports in March 2020 was more than 20% higher than the number of such reports in March 2019 in both Boston, Massachusetts, and Seattle, Washington. Nationwide, shelters and domestic-violence hotlines are also experiencing high demand.

Companies in several sectors are cutting jobs and implementing furloughs because of the covid-19 pandemic, and the employees these conditions affect will likely struggle to pay their bills in the coming months. According to Harvard University's (Cambridge, Massachusetts) Joint Center for Housing Studies, the United States had close to 44 million renter households in 2018, and nearly 50% of renters spent more than 33% of their income on rent. Because of the pandemic's effects on jobs, many people will be unable to pay rent and may face eviction. Financial firms and government officials are looking to impose moratoriums on evictions and foreclosures, but the financial effects of delayed mortgage and rent payments will likely outlast the pandemic.

Signals of Change related to the topic:

[SoC989](#) — Economic Polarization...
[SoC927](#) — Housing Issues and Opportunities
[SoC705](#) — Struggles of the US Middle Class

Patterns related to the topic:

[P1436](#) — Novel Education, New Learning
[P1106](#) — Fluidity of Urban Real Estate
[P0323](#) — Shifting Societal Values

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June 2020

P1503

The Great Working-from-Home Experiment

By Rob Edmonds (Send us [feedback](#).)

People are working from home and learning online on a scale that almost no organization planned for.

Abstracts in this Pattern:

[SC-2020-05-06-025](#) on transitioning

[SC-2020-05-06-060](#) on Zoom and Coursera

[SC-2020-05-06-046](#) on acceptance

[SC-2020-05-06-079](#) on behavior

The coronavirus-disease-2019 (covid-19) pandemic has resulted in a sudden and dramatic scale up in working from home. Many governments have mandated that some of their own employees work from home and have asked private employers to implement working-from-home arrangements wherever possible. Many schools have closed, so teachers are educating students online. Unsurprisingly, tech companies such as Microsoft (Redmond, Washington) and Twitter (San Francisco, California) were among the companies earliest to transition their employees from working in offices to working from home, but other types of companies also began making that transition as social restrictions increased.

As employers scrambled to implement the technologies necessary for effective working-from-home arrangements, collaboration-tools and online-education providers became two of the few types of companies to benefit from the covid-19 pandemic. For example, communications-technology company Zoom Video Communications (San Jose, California) is experiencing a significant increase in business, as is online-education provider Coursera (Mountain View, California). Arunav Sinha, Coursera's head

of global communications, said that the pandemic is accelerating a move to online learning that otherwise would have taken a few years.

Many employees appear to be adjusting well to working from home—or at least enjoying doing so. According to a survey of US workers that the Harris Poll (The Stagwell Group; Washington, DC) conducted on behalf of Glassdoor (Recruit Holdings Co.; Tokyo, Japan), 67% of respondents said that if their companies implemented policies requiring indefinite remote working, they would be in favor of working from home indefinitely. In addition, the rapid upsurge in working from home has produced various cultural and consumer-behavior changes. For example, working in sweatpants and a hoodie has become normal, and interruptions from pets, children, and partners have become a fact of working life. Evidence suggests, however, that at least some people are attempting to maintain their professional image in the working-from-home context. In the United States, Walmart (Bentonville, Arkansas) has reported increases in sales of tops but declines in sales of pants, which perhaps suggests that people who are working from home are partially dressing up for videoconferences.

Signals of Change related to the topic:

[SoC1154](#) — Life after the Time of Coronavirus

[SoC959](#) — Digital Education Comes Alive

[SoC701](#) — Flexible Offices

Patterns related to the topic:

[P1110](#) — Learning for Digital Transformation

[P0801](#) — Makers' Dream, SOHO's Promise

[P0178](#) — Peak Travel?

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P1504

The Tech Giants and the Pandemic

 By Rob Edmonds (Send us [feedback](#).)

Although uncertainties exist, the pandemic could increase the tech giants' influence on digital life.
Abstracts in this Pattern:
[SC-2020-05-06-082](#) on the tech giants

[SC-2020-05-06-067](#) on iPhones

[SC-2020-05-06-063](#) on Facebook

Before the coronavirus-disease-2019 (covid-19) pandemic, the tech giants—Google (Alphabet; Mountain View, California), Amazon.com (Seattle, Washington), Apple (Cupertino, California), Facebook (Menlo Park, California), and Microsoft (Redmond, Washington)—had significant and growing influence over digital life and the strategies of companies undergoing digitalization. According to some analysts, the tech giants could emerge from the pandemic stronger than ever. Amazon and Apple are benefiting from increased demand for digital entertainment; Microsoft, Facebook, and Google are benefiting from increased demand for collaboration software; and Amazon, Google, and Microsoft are benefiting from increased demand for cloud computing (as businesses realize that increasing engagement with cloud computing simplifies remote operations significantly). In addition, the tech giants with app platforms are benefiting from the sale of third-party software.

Even so, the outlook for the tech giants is not all positive, and differences exist among the companies. Facebook (Menlo Park, California) reports that in some regions where the covid-19 pandemic had a particularly strong impact, total messaging across its social-networking and messaging platforms and services increased by

50%, with video calling more than doubling. But Facebook does not monetize its messaging and video-calling services and is therefore seeing no financial benefits from their increased use. In fact, Facebook is struggling to keep these services operational and stable while losing revenue as a result of the pandemic's causing decreases in digital-advertising spending wherever lockdowns are in place. And Apple is facing uncertainty about consumer demand for its devices. In particular, Apple is unsure what effect the pandemic is having on consumers' willingness to pay the high prices that its flagship iPhone models command. The company needs to forecast demand for such phones so it can order components for its forthcoming models, which typically launch in the fall.

Despite these and many other challenges, predictions that the pandemic will strengthen the tech giants overall are likely correct (though Facebook faces some unique challenges). Perhaps more important than any of the individual wins that the tech giants have experienced is the covid-19 pandemic's increasing the use of digital services, which in turn has deepened the reliance of enterprises and consumers on the technology infrastructure that the tech giants provide.

Signals of Change related to the topic:
[SoC1154](#) — Life after the Time of Coronavirus

[SoC1005](#) — ...Value from Digital Change

[SoC731](#) — Data Monopolies

Patterns related to the topic:
[P1345](#) — Amazon's Widening Estuary

[P1334](#) — ...Relationship with Facebook

[P1275](#) — Know Monopolies...

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June 2020

P1505

No-Contact Services

By Sean R. Barulich (Send us [feedback](#).)

The pandemic is creating opportunities for companies that are operating under the current social-distancing conditions.

Abstracts in this Pattern:

[SC-2020-05-06-021](#) on no-contact drop-offs
[SC-2020-05-06-098](#) on delivery vehicles

[SC-2020-05-06-047](#) on digital payments
[SC-2020-05-06-088](#) on uses of robotics

Delivery companies are already experiencing growth as a result of the coronavirus-disease-2019 (covid-19) pandemic, and some such companies are introducing no-contact services. For example, both Postmates (San Francisco, California) and Instacart (Maplebear; San Francisco, California) have introduced no-contact drop-off services in which workers leave deliveries at customers' curb or front door and have no interaction with the customers. And some companies are scaling up logistics operations because of the pandemic. For instance, Alibaba Group Holding (Hangzhou, China), JD.com (Beijing, China), and other online retailers in China have ordered hundreds of autonomous delivery vehicles from Neolix Technologies Co. (Beijing, China). The vehicles are seeing use to transport medical supplies while spraying disinfectant onto streets as they travel. Social-distancing and shelter-in-place measures have also influenced consumer-spending habits, leading to an increase in the use of digital payments. According to estimates by McKinsey & Company (New York, New York), e-commerce transactions in Italy have increased by 81% since the end of February 2020, when the country's lockdown began. But Gartner (Stamford, Connecticut) senior research director Dayna Ford highlights that the e-payments market will likely

see a decline in overall revenue in 2020 because losses for e-payment companies that handle big-ticket purchases such as airline tickets and hotel bookings will offset gains for online retail.

Notably, the covid-19 pandemic may also facilitate the research and development of multiple technologies that support contactless business operations. For example, in a recent *Science Robotics* article, an international team comprising researchers from Shanghai Jiao Tong University (Shanghai, China), the Swiss Federal Institute of Technology in Zurich (ETH Zurich; Zurich, Switzerland), and several other institutions highlights how robotics can play roles in frontline health-care operations—for example, in decontaminating surfaces, transporting contaminated waste, and monitoring people to ensure they follow quarantine guidelines. The team argues that the pandemic will drive new opportunities in robotics that support the application of remote operation in, for example, manufacturing facilities, power plants, and waste-treatment facilities. Although the adoption of such technologies may be prohibitively expensive (especially during an economic downturn), some industry players may see investing in robotics as a way to combat emerging economic challenges.

Signals of Change related to the topic:

[SoC1120](#) — Cashless Worlds
[SoC1113](#) — ...Decentralized Business Models
[SoC1048](#) — New Marketing Realities

Patterns related to the topic:

[P1445](#) — Operational Experiments
[P1203](#) — Retail Tech
[P1084](#) — Reducing Transaction Costs...

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P1506

The New Homebodies

 By Guy Garrud and Martin Schwirn (Send us [feedback](#).)

The pandemic's forcing many people to stay at home is resulting in a variety of behavior changes, some of which may be permanent.

Abstracts in this Pattern:
[SC-2020-05-06-007](#) on human psychology

[SC-2020-05-06-072](#) on pets

[SC-2020-05-06-043](#) on remote socializing

[SC-2020-05-06-008](#) on current remote working

[SC-2020-05-06-040](#) on future remote working

In a recent article, University of Maryland, College Park (College Park, Maryland), psychologist Arie Kruglanski explains some of the psychological changes that people are going through because of the coronavirus-disease-2019 (covid-19) pandemic. Dr. Kruglanski highlights that the feeling of helplessness people are experiencing because of the pandemic increases their desire to be social; however, the social-distancing measures currently in place around the world are preventing people from interacting with one another in person. Some recent developments might be a result of this situation. For example, in New York, New York, animal-welfare organizations such as Muddy Paws Rescue and Badass Brooklyn Animal Rescue (both New York, New York) are reporting high demand for dog adoptions during the pandemic. People are likely adopting pets for companionship during this period of social distancing; however, the animal-welfare organizations are concerned that as the pandemic continues, people who become very ill or face financial challenges will have to surrender the pets they adopted. Likewise, many people who are unable to socialize in person are playing video games with others online or even using

communications technologies and collaboration platforms to play board games or attend virtual dinner parties with remote friends—activities they may continue to engage in even after the pandemic ends.

The covid-19 pandemic is also changing many people's work life. For example, numerous companies are requiring large proportions of their employees to work from home during the pandemic. This change has led to dramatic increases in the number of subscriptions to and the use of collaboration tools and services from companies such as Zoom Video Communications (San Jose, California), Slack Technologies (San Francisco, California), and Microsoft (Redmond, Washington). Companies can use this situation as an opportunity to assess how well their employees operate when working remotely and to consider whether to implement remote-working arrangements as a beneficial alternative to traditional office-working arrangements after the pandemic ends. Similarly, many employees can use this situation as an opportunity to experience remote working and its potential benefits and drawbacks. Very likely, some employees will not want to return to the office once the authorities lift shelter-in-place orders.

Signals of Change related to the topic:
[SoC1154](#) — Life after the Time of Coronavirus

[SoC1125](#) — The Art...of Collaboration

[SoC800](#) — In the Future: A Day at Work

Patterns related to the topic:
[P1470](#) — Tackling Uncertainty

[P1386](#) — Remote Operation

[P0315](#) — Social HR Strategies

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P1507

Disease and Cure: A Balancing Act

 By Martin Schwirn (Send us [feedback](#).)

Determining which responses to the pandemic best balanced medical needs and economic considerations will take years.

Abstracts in this Pattern:

SC-2020-05-06-035 on recession

SC-2020-05-06-035 on measured approach

SC-2020-05-06-015 on real estate

SC-2020-05-06-017 on price gouging

SC-2020-05-06-099 on domestic problems

SC-2020-05-06-093 on aggressive action

SC-2020-05-06-078 on economic harm

SC-2020-05-06-075 on recovery

The coronavirus-disease-2019 (covid-19) pandemic required strong responses to stop the spread of the disease and to limit fatalities. But such responses cause economic problems that invite new health threats. When does the cure become worse than the disease?

Some media outlets had already declared a recession in March 2020. Although using the term *recession* so early is technically incorrect (according to most definitions, a *recession* requires two successive quarters of declining GDP), the arrival of a recession would not be surprising. Given the economic effects of governments' heavy-handed covid-19 interventions, some observers have called for more measured, surgical approaches. For example, physician and author David L. Katz argues that "the social, economic and public health consequences... will be long lasting and calamitous, possibly graver than the direct toll of the virus itself.... The unemployment, impoverishment and despair likely to result will be public health scourges of the first order." In fact, the US government's intervention required second-order policies to avoid evictions and foreclosures that would have led to the

displacement of mostly vulnerable members of the population, who would then have been unable to follow shelter-in-place orders. Other health- and safety-related problems resulting from current interventions include price gouging and domestic violence and sexual harm.

At the same time, a strong social-distancing policy may have not only health benefits but also positive economic effects in the long run. Researchers from the Massachusetts Institute of Technology (MIT; Cambridge, Massachusetts) MIT Sloan School of Management and two financial institutions of the US government looked at the effects of the policies in use to address the Spanish flu in 1918 and found that "cities that acted more aggressively performed better." A University of Chicago (Chicago, Illinois) survey revealed that economists generally agree that lifting the lockdown in the United States when another surge in infections is possible would cause greater economic harm than would staying on course for some time. And International Monetary Fund (United Nations; New York, New York) chief Kristalina Georgieva sees containment of the virus as a prerequisite for a quick recovery.

Signals of Change related to the topic:

SoC1023 — Social Responsibility in Business

SoC563 — Challenging Capitalism

SoC553 — The Social Role of Corporations

Patterns related to the topic:

P1483 — Stakeholder Purpose...

P1265 — New Considerations for Investors

P1152 — The State-Managed... Economy

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P1508

Medical Monitoring and Surveillance Technologies

 By David Strachan-Olson (Send us [feedback](#).)

Governments and organizations are using monitoring and surveillance technologies to help manage the spread of the coronavirus.

Abstracts in this Pattern:
[SC-2020-05-06-010](#) on ZhenRobotics

[SC-2020-05-06-036](#) on monitoring technology

[SC-2020-05-06-033](#) on patrol robot

To help limit the spread of the coronavirus responsible for coronavirus-disease-2019 (covid-19), governments and organizations are adopting various monitoring and surveillance technologies, such as computer vision and robots. Such technologies can monitor how well people comply with social-distancing and lockdown orders and detect individuals who have common symptoms of covid-19.

China has been one of the countries quickest to adopt monitoring and tracking technologies to help control the spread of the coronavirus. For example, small autonomous ground robots from ZhenRobotics (Beijing, China) are seeing increasing use in China because of the pandemic. A mall in Shanghai, China, is using one of the company's robots to identify bare-face shoppers and remind them to put on a mask. Facial-recognition cameras were common in China before the covid-19 pandemic, but companies have quickly updated the cameras' technology to scan crowds and identify people who are not wearing a mask and people who have a fever—a common symptom of covid-19. For example, contactless temperature-detection systems that SenseTime (Hong Kong, China) and Beijing

Megvii Technology Co. (Beijing Kuangshi Technology Co.; Beijing, China) have developed are already in use in community centers, schools, and subway stations in several major cities in China. Drone companies are also modifying their technologies to support monitoring and surveillance applications for use in combating the spread of the coronavirus. For instance, MicroMultiCopter (Shenzhen, China) is equipping its drones with thermal cameras so they can scan crowds and detect individuals with a fever.

Although China is leading the way in the deployment of monitoring and tracking technologies for use during the covid-19 pandemic, other countries will likely develop and deploy similar technologies. For example, Tunisia's Ministry of the Interior (Tunis, Tunisia) recently began using Enova Robotics' (Sousse, Tunisia) PGuard security robot to patrol the streets of the nation's capital in an effort to aid in enforcing the government's lockdown order. The robot uses multiple infrared cameras, a thermal camera, and an omnidirectional audio-acquisition system to detect negative behaviors—in this case, people's violating the lockdown order—and sends alerts and videos to authorities in real time.

Signals of Change related to the topic:
[SoC1117](#) — Medical Robots

[SoC1078](#) — Embedding Health Monitoring...

[SoC1059](#) — ...Data and Privacy

Patterns related to the topic:
[P1447](#) — Novel Identification Tech

[P1442](#) — ...Home Health Monitoring

[P1353](#) — Productive Wastewater

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P1509

The Pandemic's Effects on Business Models

 By Martin Schwirn (Send us [feedback](#).)

The pandemic could change some business models permanently.
Abstracts in this Pattern:
[SC-2020-05-06-044](#) on digital platforms

[SC-2020-05-06-060](#) on videoconferencing

[SC-2020-05-06-063](#) on Facebook

[SC-2020-05-06-023](#) on internet-service providers

[SC-2020-05-06-059](#) on emerging models

Because the coronavirus-disease-2019 (covid-19) pandemic has triggered shelter-in-place and lockdown orders around the world, the majority of employees in many industries are working from home, students are learning online, and many social gatherings have moved from the real world to the virtual realm. As a result, collaboration-tools, online-learning, and communications-technology companies have seen their business increase rapidly during recent months. Because digital-platform-based business models are benefiting from social-distancing measures, companies such as Google (Alphabet; Mountain View, California), Amazon.com (Seattle, Washington), Zoom Video Communications (San Jose, California), and Coursera (Mountain View, California) are thriving in a very challenging environment.

The covid-19 pandemic is creating challenges for some business models that companies designed to address needs in regular times. For instance, Facebook (Menlo Park, California) reports that because of the pandemic, total messaging and video calling across its social-networking and messaging platforms and services increased substantially in some regions. But Facebook does not monetize its messaging and video-calling services and is therefore seeing

no financial benefits from their increased use.

In fact, Facebook is losing revenue because of pandemic-related decreases in digital-advertising spending. And many internet-service providers have decided to lift their data-consumption limits to benefit people whose online activities have increased because of the pandemic. As is the case for Facebook, companies such as AT&T (Dallas, Texas), CenturyLink (Monroe, Louisiana), and Comcast Corporation (Philadelphia, Pennsylvania) are providing customers with additional services but extracting no additional revenue from doing so.

Tsinghua University (Beijing, China) professor Zhu Ning and collaborating researchers from other institutions recently looked at pandemic-driven changes that will affect companies in China but also likely apply to companies around the world. According to the researchers, new business models are emerging in multiple areas—including health care, retail operations, office work, and education—and an increasing number of businesses will shift their offline services and offers online. These changes come as no surprise, but the pandemic certainly accelerated the rate of change in the business world.

Signals of Change related to the topic:
[SoC1131](#) — ...Rethinking Management

[SoC1113](#) — ...Decentralized Business Models

[SoC1029](#) — ...Time of Digitalization

Patterns related to the topic:
[P1459](#) — Rethinking Silicon Valley

[P1445](#) — Operational Experiments

[P0712](#) — Living Business Models

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June 2020

P1510

The Ascent of Robots during the Pandemic

By David Strachan-Olson (Send us [feedback](#).)

Current lockdown and social-distancing measures are expanding opportunities for service robots.

Abstracts in this Pattern:

[SC-2020-05-06-088](#) on uses for robots

[SC-2020-05-06-058](#) on disinfection robots

[SC-2020-05-06-098](#) on Neolix

[SC-2020-05-06-010](#) on ZhenRobotics

The global coronavirus-disease-2019 (covid-19) pandemic and social-distancing measures are changing the way that businesses and societies function. As part of this change, researchers and companies are becoming increasingly interested in using robots to perform a variety of tasks. In a recent article, an international team comprising researchers from Shanghai Jiao Tong University (Shanghai, China) and several other institutions discusses the important roles that robotics could play during the current and eventual pandemics. The team highlights that workshops that two science agencies of the US government hosted in 2015 identified three areas in which robotics can have a positive effect during an outbreak: clinical care (including decontamination and telepresence for doctors), logistics (including transportation of contaminated waste), and reconnaissance (including monitoring of people's following quarantine guidelines). The team argues that the current pandemic has added a fourth area: continuity of work and socioeconomic functions. According to the team, the pandemic's effects on manufacturing and commercial activities around the world justify more research into remote operation and its applications. Robotics companies are already making progress in this area.

Blue Ocean Robotics (Odense, Denmark), YouiBot Robotics Co. (Shenzhen, China), and several other companies are building robots that use ultraviolet (UV) light to disinfect surfaces. The robots autonomously maneuver through environments, shining UV light on surfaces to damage the genetic material of viruses and bacteria. Since the beginning of the covid-19 pandemic, shipments of UV-disinfection robots to hospitals and health-care facilities have increased significantly.

Because of the covid-19 pandemic, companies are also starting to leverage automated vehicles and robots in logistics applications for contactless delivery. For example, Alibaba Group Holding (Hangzhou, China) and other online retailers in China have ordered hundreds of autonomous delivery vehicles from Neolix Technologies Co. (Beijing, China). The vehicles are seeing use in China to transport medical supplies while spraying disinfectant onto streets. And ZhenRobotics (Beijing, China) is seeing a large increase in demand for its small autonomous ground robots. Various companies are using one of ZhenRobotics' robots to deliver drugs and food, and a mall in Shanghai, China, is using one of the company's robots to identify bare-face shoppers and remind them to put on a mask.

Signals of Change related to the topic:

[SoC1117](#) — Medical Robots

[SoC1105](#) — Robotic Farming

[SoC866](#) — A Flock...of Drones

Patterns related to the topic:

[P1415](#) — Autonomous Vehicles...

[P1113](#) — Robotic Ground Delivery

[P1055](#) — Autonomous Urban Transportation

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June 2020

P1511

The Pandemic's Push: Global versus Tribal

By Martin Schwirn (Send us [feedback](#).)

Many reasons exist for increasing global collaboration during the pandemic; however, the opposite might happen.

Abstracts in this Pattern:

[SC-2020-05-06-066](#) on Hans Henri P. Kluge
[SC-2020-05-06-085](#) on Nicholas Mulder
[SC-2020-05-06-011](#) on Andrew Winston
[SC-2020-05-06-029](#) on Harold James

[SC-2020-05-06-029](#) on automotive industry
[SC-2020-05-06-050](#) on tourism industry
[SC-2020-05-06-051](#) on scenarios
[SC-2020-05-06-077](#) on US states

During a recent online briefing, Hans Henri P. Kluge, World Health Organization (WHO; Geneva, Switzerland) regional director for Europe, argues on behalf of himself and the WHO regional directors for the Western Pacific and Africa that countries need to collaborate, acting in solidarity to develop national responses that will not conflict with one another. And Nicholas Mulder, a political and economic historian at Cornell University (Ithaca, New York), highlights that because ventilator assembly is complex and has steep sanitary requirements, the ventilator “shortage cannot be solved within national borders.” Andrew Winston—coauthor of *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build a Competitive Advantage*—says that the pandemic should lead to a more global outlook, explaining that “pure nationalism is frankly dangerous in the face of borderless issues like climate change, resource overuse, and, yes, pandemics. On some level, we’re only as strong as our weakest immune systems.”

In contrast, Harold James, professor of history and international affairs at Princeton

University (Princeton, New Jersey), states that “the omnipresence of such mass-scale threats, and the uncertainty and fear that accompany them, lead to new behaviors and beliefs,” making people “less willing to engage with anything that seems foreign or strange.” Industries also experience this effect. For example, international car shows were becoming less attractive to automotive-industry players even before the covid-19 pandemic, but carmakers are now accelerating the move to alternative promotional strategies such as using social media. Meanwhile, the travel industry has become a clear victim of the pandemic. Many analysts also foresee potential developments that will reverse the globalization of past decades. A German think tank recently developed scenarios about the pandemic’s national and regional effects. In one scenario, national interests trump global considerations. In another scenario, local economies are thriving as a result of diminishing connectivity with other regions. In a sign of the potential prioritization of regional interests, the governors of several US states have introduced legislation that requires people who arrive from other states to self-quarantine.

Signals of Change related to the topic:

[SoC645](#) — Urban Production
[SoC597](#) — Nationalization and Protectionism
[SoC578](#) — Localization as Strategy

Patterns related to the topic:

[P0645](#) — Nationalism Redux
[P0439](#) — Producing Locally
[P0410](#) — Building Markets across Borders

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P1512

Supply-Chain Resilience?

 By Guy Garrud (Send us [feedback](#).)

The early stages of the pandemic highlight the strengths and weaknesses of current-generation global supply chains.

Abstracts in this Pattern:

[SC-2020-05-06-056](#) on manufacturing
[SC-2020-05-06-067](#) on demand planning

[SC-2020-05-06-029](#) on global chains
[SC-2020-05-06-014](#) on 3D printing

Some industries felt the impact of lockdowns relating to the coronavirus-disease-2019 (covid-19) pandemic early on in the pandemic. For example, in February 2020, a lack of parts from suppliers in China resulted in Hyundai Motor Group's (Seoul, South Korea) suspending operations at its massive Ulsan, South Korea, industrial complex, which comprises five factories and manufactures 1.4 million vehicles every year. Fiat Chrysler Automobiles (London, England), Toyota Motor Corporation (Toyota, Japan), and other automotive manufacturers also announced that they would likely have to close some of their factories temporarily.

The covid-19 pandemic is affecting consumer demand, which further complicates logistics operations during the pandemic. For example, February 2020 saw 38% fewer smartphone shipments around the world than did February 2019. A potential global recession could severely affect demand for luxury goods such as high-end smartphones, but predicting how much demand will change overall is extremely challenging—especially when electronics manufacturers must

also contend with supply disruption from the major electronics hubs in China. Harold James, professor of history and international affairs at Princeton University (Princeton, New Jersey), believes that the pandemic is driving nationalist narratives that could lead to a rethinking of global supply chains—particularly those that include Chinese partners.

For some companies, sourcing components regionally could be an option; for other companies, making use of flexible manufacturing approaches could be an option. Although not suitable for mass-manufacturing needs, 3D-printing can offer huge advantages in terms of flexibility and task-changing speed. For example, during the early stages of the covid-19 pandemic, many private 3D-printer owners were able to use their machines to produce personal protective equipment and other in-demand items for health-care workers who were facing supply shortages. Perhaps the pandemic could trigger a reexamination of how industries source components and manufacture products.

Signals of Change related to the topic:

[SoC1154](#) — Life after the Time of Coronavirus
[SoC901](#) — Logistics and Infrastructure
[SoC737](#) — Sinister Supply Chains

Patterns related to the topic:

[P1482](#) — Supply-Chain Risks
[P1470](#) — Tackling Uncertainty
[P0111](#) — Affecting Supply Chains

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