Reopening: The Tech-Enabled Office In A Post-Covid World 2020
WHAT IS CB INSIGHTS?

CB Insights helps the world’s leading companies make smarter technology decisions with data, not opinion.

Our Technology Insights Platform provides companies with comprehensive data, expert insights and work management tools to drive growth and improve operations with technology.

SIGN UP FOR A FREE TRIAL
Covid-19 will have a lasting impact on company operations and office spaces. From autonomous cleaning devices to tighter cybersecurity measures, here are the technologies influencing how the office could look during the reopening process and beyond.

The Covid-19 pandemic has disrupted nearly every aspect of our lives, including tasks as fundamental as going to work.

While many office workers are still working from home, others across the world are now beginning to return to their offices in person for the first time in months. However, in the US, 2 out of 3 workers still feel uncomfortable returning to the workplace, according to a Qualtrics study. Outbreak prevention, worker safety, and employees’ peace of mind will be top concerns for businesses around the world as they begin to reopen their office doors.

In this report, we dive into some of the technologies that will help address these concerns and influence the future of the office space, from autonomous cleaning solutions to people-counting sensors.
While the World Health Organization (WHO) and other health authorities have issued guidance for companies to make offices safer, reopening plans vary widely between countries and cities. And as we continue to learn more about the virus, no one solution has emerged as a standalone prevention method. For example, some experts point to social distancing as being most vital to reducing spread, while others highlight wearing masks as key.

Companies will have to look to guidelines from local and national authorities for each office location. Their strategies will likely involve a combination of approaches to minimize risks for employees, which can be aided by the technologies and startups featured in this report.

Throughout this report, we visualize the tech-enabled in-office journey for an employee whom we'll call Rachel. Here are some of the new considerations and technologies that may impact each part of Rachel's working day.
Moving forward, many companies will likely reconsider their corporate real estate footprint, whether that involves downsizing or redistributing space to satellite offices. A completely remote workforce seems unlikely, given the intangible benefits of social connection, collaboration, and innovation that in-person working provides. Nonetheless, it will be crucial to create optimal conditions for employees to work remotely as well as in the office.

To stay ahead of the curve, companies will need to consider key investments across wellness, remote collaboration tools, mobile cybersecurity tech, accessible HR tools, and workforce training programs for professional development and upskilling.
# Table of Contents

Lobbies and building entrances: pre-entry wellness checks 7
Elevators and common spaces: touchless entry and air filtration 16
Desk space: social distancing sensors 25
Conference rooms: remote collaboration tools 33
Bathrooms: autonomous cleaning solutions 43
Kitchens: low-touch and voice-enabled tech 52
On-the-go HR: employee wellness, communication, and engagement tools 59
Beyond the office: cybersecurity and at-home network security 68
Conclusion 74
Lobbies and building entrances: pre-entry wellness checks

Rachel arrives at the building at her scheduled time slot. Her temperature is checked before she waits in a socially distanced line for the elevator.

As a building’s first point of contact — and first line of defense — entrances and lobbies are poised for a revamp in policies and procedures when it comes to fighting the spread of Covid-19. The criteria for authorized occupants could include pandemic-specific considerations like employee schedules, health indicators, and contact tracing.

Many companies that have already returned to work are using apps and daily health surveys to screen employees before arrival. This ensures that employees experiencing symptoms or who have been exposed to a positive case of Covid-19 do not come in.

In China, QR code-based immunity passports embedded within super apps like WeChat and Alipay have become ubiquitous, already rolled out in at least 200 cities. Individuals using Alipay’s Health Code fill out a form in the app and the software uses big data to generate a QR code depending on a user’s contagion risk. Those who are designated green are able to travel freely, while yellow or red indicate suggested 1- or 2-week quarantines, respectively.

Elsewhere, UK-based Onfido and Germany-based IDnow have each actively engaged with the UK government to discuss the use of immunity passports, which would tie official Covid-19 test results to a user’s digital identity.
Similarly, New York-based biometric startup CLEAR, whose kiosks are seen in airports and stadiums around the country, has developed Health Pass, which links biometric identifiers to Covid-19 health information that users upload through approved test providers.

Health screenings and verification using contactless wellness checks will also likely become common in office lobbies. Front desk and lobby workers may use handheld contactless thermometers (like those from iHealth) to check temperatures.

At the end of May 2020, Salesforce reopened its offices in South Korea, Hong Kong, and China. The company is employing its own Work.com solution, through which employees take a 5-question “Daily Wellness Check-In” survey, to ensure safety. Employers that use Work.com can also limit building or floor occupancy and assign shifts and time slots to avoid floor overcrowding and bottlenecks at elevators.
For visitors, who may be outside of the closed-loop system and could pose an additional risk, office lobbies can institute biometric kiosks similar to CLEAR’s in order to provide some form of immunity verification. South Africa-based Kenai, for one, can alert building staff if a visitor does not meet entry requirements based on their responses to coronavirus-related questions.

Elenium Automation has recently partnered with Amazon Web Services (AWS) to launch a self-service kiosk that uses touchless and vital sign detection technology at airports. This could be implemented in office lobbies to handle visitors and clear people before swiping their IDs or letting them proceed to the office.

Finally, some offices are also installing sneeze guards in front of check-in desks to further protect lobby staff.
WHY IT MATTERS

As the first point of entry in all buildings, lobbies will play a critical role in screening for health, facilitating authorized entry, and enabling social distancing.

While corporate tenants and building management may have different policies, having the proper tools and procedures in place to screen employees and visitors will be crucial to policy enforcement.

And because Covid-19 could become cyclical, the ongoing collection of employee health data could enable more targeted initiatives to improve the overall health of the workforce and, as a result, improve overall productivity. In the US, poor health ends up costing employers $530B annually, some of which can be avoided with better management of the transmission of illness.

Source: Wellable
ADVANTAGES: PREVENTING DISEASE SPREAD & ALLAYING EMPLOYEE CONCERNS

Daily health surveys screen employees before arrival and can be completed from the comfort of the home. Capturing this information has 2 advantages.

First, information collected in advance helps to provide a smooth experience for entering the office instead of risking the need to turn employees away at the door.

Second, building up a database of employee health patterns could help companies identify any opportunities to improve broader employee well-being. For example, if at-home pre-entry health check data shows elevated instances of high temperatures, companies could preempt the start of flu season and enable more work-from-home options to reduce transmission.

Source: Salesforce
While still relatively new, biometric technology is a growing market, and its advantages are driving increased adoption. Biometrics — which measure a person’s physical characteristics, such as fingerprints or voice patterns — are often more secure than other authentication options, more convenient for customers, and more cost-effective for businesses.

For employees, safety measures have clearly become table stakes. Many workers would not feel safe to return without measures such as mandatory testing in place.

Pre-entry health screens and staggered entrance times can thus serve as outward displays that an employer is taking safety seriously. By implementing and enforcing these systems, employers can create a more positive experience and reduce anxiety.

Finally, several of these solutions are relatively low in cost. iHealth’s no-contact thermometers retail for less than $45, and Salesforce’s Workplace Command Center, which centralizes key real-time reopening metrics, starts at $5 per user per month as an add-on to existing Salesforce products.
CHALLENGES: HEALTH SCREENS RAISE SECURITY CONCERNS

Wellness checks are not fail-proof, especially considering the FDA’s loosening of regulations around thermal camera systems. Businesses could risk missing asymptomatic carriers or read inaccurately.

Furthermore, with preventative steps taken at the door and before they arrive, some employees may develop a false sense of security once they enter the office. This could lead them to not take other precautionary measures like social distancing as seriously.

Additionally, given that health data is sensitive and must be handled securely, health and biometric screens can present privacy and discrimination concerns.

Past incidents from biotech and genealogy companies have dampened public trust in the privacy of health data. For example, in 2018, 23andMe entered a $300M deal to sell data to drug giant GlaxoSmithKline, while in 2019, MyHeritage experienced a data breach that exposed details from 92M+ accounts.

PopID, a wall-mounted thermal imaging camera that uses facial recognition, has been deployed in Subway and Taco Bell franchises, as well as assisted living facilities, to measure employee temperatures. It can also be used to track worker compliance. It’s left up to the employer to decide whether to keep or delete personal data.
Biometrics also pose the challenge of potential bias. The subjects of common facial recognition training datasets, for instance, are estimated to be over 75% male and 80% white, according to a 2019 study conducted by the Brookings Institute. This bias introduces a disproportionate risk of false positives across racial and gender demographics.

On the topic of immunity passports, there is still speculation as to what “immunity” really means, and whether having antibodies necessarily equates to immunity from reinfection. Further, some estimate that it could take anywhere from 12 to 18 months to set up the necessary certificate infrastructure on the medical side to support these passports, by which point there could already be a vaccine in place.
LOOKING AHEAD: STRIKING A BALANCE FOR BIOMETRICS

Over time, as vaccines become available and the severity of Covid-19 begins to diminish, the health surveys and temperature checks some companies are mandating will no longer be required for entry.

Biometrics, on the other hand, may be a more permanent fixture in the process of authorizing employees or visitors. Given the richness of biometric data, including key health data, companies may explore anonymizing it for use cases such as planning for an upcoming flu season or triggering alerts when multiple employees come to work with elevated temperatures.

However, there will be significant challenges in widely implementing this technology. User acceptance and public opinion are major obstacles, as many people view biometrics as an invasion of privacy and are reluctant to adopt the technology.

But as consumer product makers (such as Apple) continue to use biometric technology, this resistance and skepticism may soften. Schools, colleges, hotels, and even business conferences could look to biometrics as a requisite to verification.

Our public report on the 9 industries that biometric technology could transform is available here.
After stepping off the elevator, Rachel motions her hand to unlock the door and steps inside the office. She uses hand sanitizer before heading to her desk.

Approximately 75% of the air in the office is recirculated and filtered indoor air. As a result, air filtration systems and humidity controls are top of mind for building management and companies in countries like China that have already returned to work.

The particular matter (PM) size of airborne coronavirus particles is much smaller than its surface-borne counterparts, which has implications for the density of HVAC filters. In addition to stressing the importance of social distancing and handwashing, businesses can improve air quality by properly installing and maintaining existing air filtration systems.

Another popular approach for some reopened offices has been to use UV lights to kill airborne pathogens.

Startup UV Angel makes an air treatment system that continuously neutralizes harmful bacteria, including coronaviruses, using light purification technology. It can be easily installed into a traditional ceiling light fixture and circulates clean air back into the space.
For both air and surfaces, startup Healthe develops far-UVC technology that utilizes a specific wavelength to neutralize contaminants by denaturing pathogens. Far-UVC appears to be even safer than its UVC counterpart and is less likely to cause irritation, while still disinfecting surface-borne and airborne pathogens. Healthe’s Cleanse Air-Sanitizing Troffer inactivates pathogens in the air, while its walkthrough Cleanse Portal sanitizes skin, clothing, and goods.

Source: Healthe

Elevators have proven to be particularly challenging for social distancing. In addition to low-tech solutions such as adding visual cues to limit capacity, companies have also started to stagger entry times to alleviate crowding issues.
In Salesforce’s recently reopened offices in Asia, elevators are limited to 2-4 people and individuals are expected not to talk.

Higher-tech solutions have also appeared, including foot-operated elevators in Thai malls to minimize contact with buttons, as well as an ultraviolet sanitation solution from Ashla Systems that uses hospital-grade UVC rays to kill pathogens in empty elevators.

Source: Ashla Systems

A handful of companies are exploring gesture detection technologies to help individuals command elevators without touching buttons.

Ultradeap's virtual touch product STRATOS uses ultrasound technology to create mid-air haptics and sensors equipped with infrared lights to track hand movements, providing users with a virtual tactile response to their gestures. It can be adapted to button panels in elevators.

Ultradeap's STRATOS products cost between $5,000-$7,500, while its hand-tracking solution that does not include haptics costs less than $100 per unit.
Meanwhile, China-based startup EASPEED has developed a solution to help retrofit elevators with holographic buttons using a glass mirror and an electric sensor to detect finger movements in the air.

Once employees step off the elevator, some offices contain additional security to enter certain floors or offices. Doors using PIN entries for access can be replaced by low-touch or touchless entry.

Proxy and Kisi offer solutions that enable the touchless workplace by using an individual’s smartphone to gain entry.

Openpath recently launched its Wave to Unlock solution and has partnered with conference room management startup Robin to route visitors to team leads or floor managers, enabling a better understanding of the floor’s occupancy.
WHY IT MATTERS

Given the impact of coronavirus on the respiratory system, an important step in the reopening process is checking air quality and making sure HVAC systems are working properly, especially in shared or tight spaces. The Centers for Disease Control and Prevention (CDC) recommends increasing the amount of fresh, outdoor air circulating inside, and property management firm CBRE recommends closely examining HVAC systems, particularly in spaces that have greater occupancy limits or experience higher foot traffic.

Operating rooms in hospitals use filters that have the highest Minimum Efficiency Reporting Value (MERV) rating, a 16-point rating system for HVAC systems that accounts for the size and amount of particulates that are able to pass through. Standard commercial office buildings, on the other hand, are only required to use filters with an MERV 6 rating, which may allow smaller particles like airborne microbes to pass through.

Elevators and doorways are a key point of contact between people working throughout the building, maintenance staff, visitors, vendors, and others.

Managing the flow, operation, and sanitization of elevators will be a key component in instilling confidence in returning employees. In high-rise buildings, elevators tend to have poor ventilation and create traffic bottlenecks, forcing people into close quarters and increasing the risk of transmission.
ADVANTAGES: PREVENTING SURFACE SPREAD AND IMPROVING BUILDING AIR QUALITY & EFFICIENCY

Improving air quality can enhance employee productivity and health. It is one of the top workplace wellness perks that employees prioritize, in addition to natural light, comfortable temperature, and acoustic levels, according to a survey from View, a California-based green building solutions company with nearly $2B in disclosed funding.

These investments can also result in cost savings to building owners through improved energy efficiency.

Massachusetts-based enVerid, which focuses on improving indoor air quality using energy-efficient HVAC solutions, states that building owners can see 20-30% reductions in HVAC energy costs while improving occupant comfort and indoor air quality with its enVeridHLR modules. The company received $20M in Series B funding in March 2020.

Floor stickers and clear indications of where people should wait and stand in the elevator are fast and cost-effective to implement. On top of this, gesture detection for pushing elevator buttons is an intuitive solution due to the ease of installment and simple commands.

Low-touch or touchless entry using smartphones or “wave to unlock” solutions require less hassle than certain traditional methods, such as keycards, which can also be easily duplicated. By using Wifi, LTE, or Bluetooth, the latest mobile solutions can unlock doors while still in a bag or pocket.
CHALLENGES: UNPROVEN STUDIES AND INCONVENIENCE

While reducing indoor air pollution using HVAC systems is important, it isn’t scientifically proven to be a standalone solution for preventing coronavirus. No specific recommendation for a certain filter currently exists, as this varies by building. Nonetheless, the CDC still recommends that businesses examine and consider improvements to ventilation.

While some studies suggest that low doses of certain forms of UVC light, such as far-UVC, are safe for humans, more research is needed to understand the efficacy of light purification technology for sanitizing.

Costs associated with installing and maintaining UVC fixtures can also become prohibitive in commercial settings. To install commercially available fixtures in a medium-sized warehouse store like Walmart would cost around $100,000, not including ongoing maintenance.

Crowding into an already full elevator has long been an almost comical scene in daily office life. But with social distancing rules in place, elevator wait times will inevitably cause employee frustration.

Finding the right level of in-office worker density will be a challenge, but not an insurmountable one, given the tech solutions available today.
LOOKING AHEAD: BOTH SHORT- AND LONG-TERM ADAPTATIONS ARE IN THE WORKS

Some measures, like limiting elevator occupancy, are short-term adjustments that will likely fade away over time. In some buildings that have returned to work in Asia, where masks were common prior to the pandemic, it’s reported that people are packing into elevators, though still wearing face coverings and refraining from speaking.

As we become more conscious of avoiding frequently touched surfaces, touchless modes of entry will displace traditional card swiping. Many updated solutions leverage existing mobile phones and their Bluetooth, Wifi, and LTE capabilities to enable access. As more organizations adopt these solutions, the dependence on internet and telecommunication networks will continue to increase, potentially accelerating the ubiquity of publicly available internet.

Source: Openpath
Following the pandemic, buildings are likely to pay closer attention to air quality issues as corporate tenants lobby to improve employee health and comfort throughout the office. Many buildings already have systems in place, but Covid-19 will spark a reexamination of requirements such as MERV ratings to ensure a safe environment.

To achieve this level of control and visibility into environmental health, smart building solutions that integrate hardware and software to enable building managers to more precisely manage temperature and energy output, as well as monitor filter maintenance and building density, will become increasingly necessary to maintain safety and keep costs in check.

Finally, new methods of filtration, like bi-polar ionization (BPI), are starting to gain interest from major firms like JLL and CBRE. The method uses high-voltage electrodes to produce reactive ions to interfere with airborne contaminants. That said, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has yet to recommend BPI technology, citing the need for more conclusive scientific research to support its efficacy.

*Our Smart Cities Collection, which includes startups working on building energy efficiency and more, is available to clients here. Our brief on gesture technology and other technologies enabling contactless customer interactions is available here.*
Rachel follows the one-way traffic arrows on the floor to her desk, which have all been spaced apart and rearranged to allow for proper social distancing. She waves at a colleague working at a workstation a few seats down.

Social distancing in the office may be one of the most important factors in reducing transmission.

In March 2020, a Covid-19 outbreak occurred in a South Korean call center. Of the 97 people who tested positive for Covid-19, 94 of these individuals worked on the same floor, mostly sitting nearby each other.

The image below shows the call center’s floor plan, with the seats of employees who tested positive marked in blue.

Source: KCDC/CDC
It’s assumed that lasting contact and interaction was the main reason for the spread, underscoring the importance of social distancing between employees as a primary risk mitigation strategy in reopened offices.

But in recent years, companies have generally moved away from cubicles toward open floor plans. As businesses have focused on maximizing the corporate real estate footprint, square footage per employee has trended down over the last decade. These shifts are not conducive to preventing the outbreak of infectious diseases, and open floor plans have been linked to an increase in sick days.

In the first phases of returning, businesses may look at rearranging workspaces and reducing occupancy by as much as 50-70% as some employees continue working from home.

To improve social distancing for those in the office, startups like Density, Staqu, Outsight, Zensors, and VergeSense are developing spatial intelligence and people-counting tech. Singapore-based Contatrack facilitates contact tracing in the office.

These solutions can help businesses plan their return-to-office strategies and monitor them in real time when certain areas in the office reach maximum capacity.

VergeSense uses sensors to monitor occupancy, send alerts when too many people are in a space, and create daily reports to aid in social distancing. After raising $9M in Series A funding in May 2020, the company stated it expected a 500% increase in sales bookings quarter-over-quarter (QoQ).
With India-based Staqu’s JARVIS solution, businesses can track individuals with elevated body temperatures in real time and determine if they are spaced far enough apart.

Zensors uses computer vision to track occupancy in spaces around the office and can identify how many tables or seats are occupied. Similarly, Density’s Safe product uses automatic people-counting sensors to help maintain social distancing in the office.

Modified seating arrangements may allow for proper social distancing, particularly in open office floor plans. Employers can move desks apart and establish seating formations that leave every other desk empty.

Another critical component is physical barriers, such as face coverings. Many companies that have already returned are requiring employees to wear masks, unless prohibitive to job function.

Plastic sneeze guards between and in front of workstations are another option to reduce contact — though the distance between individuals may be more critical to preventing transmission.
However, barriers can provide other benefits. Some companies have reported an increase in sales leads because the plastic guards work to muffle nearby sound, improving concentration. They can also allow more natural light to enter the space.

Some of the byproducts of open office floor plans. Source: SHRM

Offices may ask people to remove personal belongings like picture frames from their desks to allow for better cleaning, and also limit the number of bags they bring each day.
WHY IT MATTERS
Reducing the density of individuals sitting in close proximity or in open areas may be one of the most important factors to prevent widespread infection, as seen from the outbreak in the South Korean call center.

As office space per employee has decreased over time, maintaining social distancing under current office setups will be a difficult but necessary undertaking.

ADVANTAGES: STRAIGHTFORWARD IMPLEMENTATION FOR BOTH LOW- AND HIGH-TECH SOLUTIONS
For many companies, separating workstations, adding sneeze guards, and reassigning seating to put people further away from each other can be fast and easy to implement.

Additionally, tech such as spatial intelligence platforms and people-counting sensors can make it easier for management teams to more proactively plan for and monitor social distancing.

With some solutions, employees can use a dashboard to see which areas are at capacity before they leave their desk, reducing the chance of unnecessary contact. This could also boost productivity by reducing the time it takes to locate co-workers.

From an employee standpoint, workers may enjoy the flexibility and gradual transition back to the office after extended amounts of time out of the office.
CHALLENGES: PROTECTING PRIVACY AND SANITY

Employees may feel safer with people-counting technologies and sensors in place, but privacy concerns could cause unease about having “Big Brother” tech monitoring employees’ every move. Some startups have already taken this into account: Zensors uses facial blurring, while Density does not use any personally identifiable information to maintain privacy.

Source: Density

If different individuals utilize the same workstations on separate days of the week, companies will have to consider cleaning equipment between new occupants, potentially making flexible seating arrangements more difficult.

Some social distancing accommodations, like adding partitions, may disrupt airflow, which should be monitored in the rearrangement process.
Lastly, it’s important to consider the mental impact of working in a more sterile office environment. Businesses should strive to keep the office a pleasant place, even if employees are physically distanced and isolated.

While safety and sanitization are a primary concern, companies may want to consider ways to keep the atmosphere welcoming. Adding biophilic design elements like plants and maximizing natural light can help raise spirits and productivity.

LOOKING AHEAD: DECENTRALIZING THE OFFICE

Overall, companies of all sizes will likely reexamine their long-term needs for fixed space. A survey from CoreNet Global found that 69% of surveyed companies plan to reduce their total real estate footprint in response to Covid-19.

Analytics from spatial intelligence platforms and sensors can help management teams understand how employees use the space to make thoughtful design decisions.

On a day-to-day basis, a reduced need for occupancy will allow some companies to downsize, decentralize, or redistribute space into smaller offices to create hubs closer to where people live. This will also reduce commute times for many employees.

An entirely remote workforce seems unlikely for most companies, with an office providing intangible benefits such as social connection, collaboration, and innovation. Additionally, there are still a variety of roles that require being physically present in an office.

Beyond Covid-19, it’s likely that employees may have more flexible schedules and work situations that do not require them to be in the office every day.
As this arises, companies will need to consider ways to foster social cohesion and company culture among a distributed workforce. To this point, startup Five To Nine helps businesses organize their remote and in-person company events, as well as measure their effectiveness to get a true sense of worthwhile employee experiences.

Looking even further ahead, businesses will need to consider how to create more remote-friendly roles as office work becomes increasingly decentralized. It will be critical to invest in employee education and upskilling (discussed below in the HR section) to avoid future business disruptions.
Social interaction and collaboration are major underpinnings of the in-person office space, which helps facilitate communication and connection.

But meeting and conference rooms, a core component of in-person collaboration, will undergo a transformation. The resulting arrangements will need to accommodate for a likely increase in remote presence, as well as altered in-office presence. Meeting spaces in the workplace will have to be adapted to make in-person-to-remote meetings more meaningful and productive.

The first order of business for in-office footprints will be to either repurpose meeting rooms into individual quiet rooms or place significant limitations on the number of occupants allowed in a meeting room.

Robin, a Boston-based workplace experience software platform, has recently focused on creating a hotel-like system where employees can reserve conference rooms as well as desk space according to social distancing guidelines. The company also offers a workplace analytics solution that uses a customizable API.
In the near term, meeting rooms will continue to use video conferencing apps like Zoom to facilitate remote meetings. However, it’s important to acknowledge that videoconferencing is a poor analog to in-person interactions and can give rise to the phenomenon of “Zoom fatigue.”

Video conferencing can actually be more draining than in-person interactions, as it requires a higher degree of energy to process non-verbal cues such as facial expressions, voice tone and pitch, and body language.

Existing collaboration apps have also tended not to prioritize the functionality of tools like shared virtual whiteboards, polling options, hand raising, and transcription.

Companies are already looking to address these shortfalls, adapting their products to minimize disruptions in the remote working experience. For example, in response to user feedback gathered since the outbreak of Covid-19, Microsoft is developing an algorithmic noise-reduction feature for Teams that automatically mutes ambient sounds during meetings.
The company has developed a number of additional features for Teams, including a “raise your hand” feature to indicate when a meeting participant wishes to speak, support for offline access, and an integration with RealWear industrial headsets.

In the long term, as a wider range of workers shift toward partial or full remote work, these augmented forms of collaboration will become essential to lines of work where hardware and hands-on work are required. But beyond the job, improving collaboration will be key to maintaining a sense of engagement at work.

Several companies offer solutions that are trying to take remote collaboration a step further. Yac offers a voice-based enterprise chat tool that integrates with Slack to facilitate communication between spread-out teams. Companies such as Beekast offer teams a way to collaborate digitally to alleviate the challenges brought on by social distancing and remote work.

Miro, a San Francisco-based digital whiteboarding platform, builds customizable software to help teams collaborate across a variety of use cases from meetings and workshops to ideation and brainstorming. Miro captures notes and saves whiteboards, which could be more effective than in-person marker sessions where work gets erased.

The company has reportedly seen a surge in usage during the pandemic and already serves 80% of the Fortune 100, including Netflix, Salesforce, PwC, Spotify, and others. The company has raised $75M in funding from investors including Accel and ICONIQ Capital.
In a similar vein, France-based platform Beekast enables meeting organizers to upload presentation materials and integrate a variety of forms to facilitate discussion and increase engagement. Through the platform, meeting organizers can poll for decisions to move projects forward as well as transcribe meeting notes.

**WHY IT MATTERS**

A larger remote workforce coupled with uncertainty around business travel means businesses must rethink traditional formats for meetings and the physical spaces in which they happen.

Many offices already have basic video conferencing and messaging platforms in place, but these standards are the bare minimum and will be inadequate for sustaining a positive and productive work environment long-term.
While many organizations have experienced a productivity bump, certain teams have fared better than others. At EventBrite, for instance, engineering teams have notably thrived in the transition to remote work. Its sales and customer service teams, however, have had a much more difficult time, because opportunities to spontaneously consult teammates on how to handle difficult situations have become much less available.

Without the proper tools in place, remote communication is a source of difficulty and frustration, particularly for sales, customer service, and other people-facing teams where impromptu interactions with colleagues are an integral component of the job.

Accordingly, the number of earnings call mentions of “remote collaboration” and “virtual collaboration” have soared since Q1’20, as companies look to adapt to unprecedented conditions.
ADVANTAGES: DRIVING PRODUCTIVITY & ENGAGEMENT

It’s undeniable that Covid-19 has forced companies to accelerate their digitization efforts, creating new efficiencies beyond the short term.

Video conferencing products like Zoom have been a useful tool during this period. However, they are by no means the perfect analog to in-person interactions. This movement has brought a niche, although growing, ecosystem of tools that improve the meeting and collaboration experience into the mainstream.

New collaboration tools clear space for higher-value activities. As an example, San Francisco-based Gong uses natural language processing (NLP) to transcribe, analyze, and annotate meetings and client calls to identify opportunities and obstacles. Recordings are accessible to users and can be reviewed asynchronously. By automating the mundane, Gong enables teams to spend more time strategizing and finding ways to win business.

Additionally, digital workspace solutions like Tandem can be used not only for meetings, but also for informal chats. This can help recreate in-office camaraderie. Tandem’s messaging platform offers a “water cooler” option to simulate chance interactions in the office.

Similarly, virtual environments like Miro and MURAL attempt to remove some of the friction of video conferencing, where participants may feel disengaged given the limited functionality to participate, thereby increasing the productivity and overall experience of online meetings.
CHALLENGES: PRIVACY, SECURITY, AND MANAGING THE LEARNING CURVE

As the world moves increasingly online, cybersecurity is an omnipresent threat (as we discuss further on in this report). Where cybersecurity applies to meetings and conferencing, Zoom serves as a good example of the hazards of abruptly moving digital.

Early on, as hoards of new Zoom users joined the platform, outside users found ways to join meetings and disrupt them by broadcasting graphic content. This became known as “Zoombombing.” Instances of intrusion were so frequent that the FBI issued a warning about the phenomenon.

Source: NPR via Twitter
Although Zoom has since addressed the issues, security researchers initially found critical flaws in the software that could let hackers spy through webcams and microphones, highlighting serious ramifications if cybercriminals were to exploit the system.

In addition to urging password-protected meetings, Zoom CEO Eric Yuan stated in early April 2020 that the company would be pausing new feature development to address privacy and security problems. In May, the company also acquired Keybase, a New York-based cybersecurity company, to further these efforts.

Beyond cyber concerns, adopting new digital tools may pose a particular challenge for older segments of the workforce compared to more digitally native counterparts. Training will be necessary as workers learn to adapt to new ways of doing business.

**LOOKING AHEAD: AR/VR SOLUTIONS PRESENT A NATURAL PROGRESSION**

Moving forward, it seems likely that many employees will split time between remote and in-office work a few days a week. During this period, and even after Covid-19 subsides, remote collaboration tools will be important for maintaining efficiency and facilitating meetings of all sizes for distributed workforces.

Because the pandemic will have meaningfully challenged the way we meet and convene, companies will need to identify which tools and technologies are best-suited to small- vs. large-scale meetings.
Even prior to Covid-19, companies had been thinking of new meeting formats. In 2017, Microsoft acquired AltspaceVR, which facilitates live events such as business-related conferences. In March 2020, the company announced additional support for VR events in response to the Covid-19 outbreak. Watch this category as more companies look to experiment with new ways of engaging audiences.

Despite the hype around AR/VR, the technology has yet to be widely adopted in the business setting and has been largely absent from the enterprise market. However, Covid-19 may push the technology forward, as traditional video conferencing feels to many like an incomplete substitute for in-person meetings, unable to account for non-verbal cues and other group dynamics.

Companies have started to experiment with AR/VR in a work context to help capture some of these human qualities in virtual interactions. Spatial, for example, allows people to interact using 3D avatars. Spatial is compatible with any AR or VR device in addition to standard webcams, and can give users the ability to perform "in-person" rituals like shaking hands and high-fiving.

While the predominantly enterprise-focused company has brought on Mattel and Pfizer as clients, it has recently opened up the platform to anyone with an email address. In light of Covid-19, Spatial reports a 1,000% increase in demand.
Even further down the line, as VR becomes more mainstream within the enterprise, holograms could emerge as a medium to allow remote participants to be “physically present” in a room. Today, Base Hologram is using its technology for entertainment purposes, but this tech could one day find itself in the boardroom.

Take a look at our market map of 65+ companies helping organizations work from home.
An occupancy display outside the bathroom door tells Rachel it is relatively empty, and she steps inside. After washing her hands, she passes an autonomous robot cleaning the floors on her way out.

Hygiene is top of mind for companies as they slowly welcome back employees and customers on premises. Mentions of “sanitation” and “disinfection” on earnings calls have skyrocketed throughout Q2’20, according to the CB Insights Earnings Mentions Tool.

Hand sanitizers and disinfectant wipes will likely be staples around the office. Cleaning frequently touched surfaces and shared spaces both efficiently and thoroughly are among the challenges companies face. Some companies that have returned to the office are cleaning shared surfaces as frequently as every hour.

For door handles, startups like NanoSeptic and Skoon make self-cleaning solutions that can be attached to handles around the office, such as entrances to conference rooms, lobby, and restrooms. NanoSeptic also offers a pad for push doors.
As visible and continuously self-cleaning solutions, individuals may feel more aware of the company’s efforts to keep them safe, giving them more ease as they navigate the office.

For equipment and devices like keyboards, Germany-based Dyphox makes disinfecting wipes that are safe for keyboards. The UV Angel Adapt uses light treatment to clean surfaces like monitors and keyboards whenever they are not in use.

Some companies may also choose to add cleaning stations for personal devices or cellphones upon entry or around the office, such as those offered by Glissner or CleanSlate UV.

For floors, autonomous cleaning solutions like Canada-based startup AvidBots and Germany-based startup Adlatus Robotics can clean different floor types while navigating around obstacles like people or fixed objects, though they are primarily designed for large-scale facilities like airports and warehouses.

Across the entire office, occupancy monitoring startups like Zensors and Density are also capable of notifying staff when specific rooms need cleaning, from conference rooms to bathrooms.
Beyond general cleaning, a specific space to focus on is the bathroom.

Ideally, fully enclosed bathroom stalls, which are more common outside the US, can help better contain germs spread by toilet flushes over large areas. Every flush can spread germs as far as six feet.

Companies without floor to ceiling partitions between each toilet may choose to mark off every other stall to ensure proper distancing.

Washington-based company Washie has created a toilet seat that dispenses cleaner from a sensor, allowing employees to clean the seat before use, which is slated to launch in September 2020.

Source: Density, Zensors
While occupancy sensors outside the bathroom door can alert employees to when the bathroom may be too crowded to enter, startup Tooshlights makes it easier for people to tell whether a stall is occupied, helping to control flow inside the bathroom.

Data collected from these devices can also inform companies what times the bathroom sees higher traffic to plan for cleaning.

For other high-touch areas like the sink, touchless features are ideal. Since the outbreak of coronavirus, many Americans prefer using public bathrooms with touchless features, according to a study by Bradley Corp.

One exception to touchless features is hand dryers, many of which actually blow bacteria from the air onto hands during drying. Companies may want to consider upgrading to one with UV and air purifying features, or replacing these with paper towels.

Health authorities recommend frequent handwashing to prevent the spread of Covid-19, and startups are working on ways to tell if handwashing is effective.
To check this effectiveness with startup PathSpot, individuals place their hands under a scanner, which detects whether pathogens are still present in two seconds. While initially designed for the food service space, establishments in other sectors can use its technology. The company reports that businesses using its technologies see a 3x increase in handwashing.

PathSpot recently raised $6.5M in Series A funding in May 2020, bringing total disclosed funding to nearly $11M.

Finally, New York-based Somatic offers a fully autonomous robot to clean bathrooms that is trained using virtual reality. It also recharges itself and refills supplies unassisted, and even moves between floors and opens doors on its own.

The company plans to lease its robots out for approximately $1,000 per month.
WHY IT MATTERS

If employees do not feel assured that enhanced cleaning measures are sufficient, they may feel that they are facing an undue risk of infection by returning to work. The bathroom specifically has long been associated with germs even before the Covid-19 outbreak, and is a high-traffic area of the office.

One study found coronavirus survived in human feces more than a month after recovery. Though the study was not conclusive on whether fecal to oral transmission can occur, no one can argue against wanting to reduce their exposure of coronavirus (and other illnesses) from human waste.

Bathrooms are also often overlooked when it comes to employee satisfaction. A previous study found that the restroom was a top complaint for US office workers people surveyed on workplace satisfaction.

No matter how cleaning is handled, employers should look to proactively communicate any changes and procedures to employees to put them more at ease about their return.
ADVANTAGES: AUTONOMOUS CLEANING SOLUTIONS
MAKE SAFETY APPARENT

A number of enhanced cleaning solutions — such as self-cleaning handles and adhesives — can be retrofitted to existing office fixtures. Many of these are also very visible, putting workers more at ease.

Using autonomous cleaning robots and self-cleaning solutions also reduces exposure for janitorial staff, allowing them to focus on other areas of the office that require more manual cleaning.

Source: Somatic
CHALLENGES: COSTS AND POTENTIAL DISRUPTION

While some solutions mentioned above would require a simple installation, others may require a complete overhaul of an existing space and ongoing maintenance, translating to higher costs.

Self-cleaning robots are primarily designed for large spaces with lots of activity, like airports and warehouses. While they can clean continuously, it’s possible that office workers may find these devices a nuisance and disruptive to their work.

In the bathroom, reducing the number of available stalls may create a line even with reduced occupancy overall. This may cause general employee frustration or be a sensitive issue for others, such as those with medical issues or medications.

LOOKING AHEAD: CLEAN AND WELL-DESIGNED BATHROOMS MAKE GOOD BUSINESS SENSE

Nearly 87% of respondents in a survey by CoreNet Global believed that intensified cleaning protocols will continue for at least 6 months after workers return to the office.

Down the road, when social distancing and fear of infection from Covid-19 are no longer a top priority, employees may be accustomed to the “visual cues” that many of these tech solutions provide, particularly in high traffic areas. Cleaning solutions also can make the work of janitorial staff more efficient.

Specifically in the bathroom, thoughtful design and considerations can go a long way in preventing the spread of illnesses, and they may make employees view businesses in a more positive light.

Bathroom designs in the US tend to differ from other countries in Europe and Asia, which tend to have fully private, gender neutral toilets.
While there are many short-term fixes to accommodate social distancing in restrooms, long-term investments in higher quality bathrooms and clean facilities can change the employee and customers’ perception of a business. Higher workplace satisfaction among employees also has positive effects on the bottom line, meaning good bathroom design can indirectly benefit profitability. Businesses may want to keep this in mind in the future.

*Clients can see more startups working on self-cleaning tech [here](#). Companies working on disinfection for large-scale facilities can be found [here](#).*
Kitchens: low-touch and voice-enabled tech

Rachel picks up lunch from the company’s group order that was delivered to the office. She takes it back to her desk to eat, joining the virtual water cooler chat room to enjoy lunch with her colleagues working remotely or in various parts of the office.

Kitchens and break rooms are other high-traffic areas throughout the day, particularly during lunchtime.

Like other parts of the office, the kitchen will require more frequent cleaning. For businesses concerned about the safety of harsh cleaning chemicals around food, startup Sanitizit makes a quick-drying disinfectant that is safe for food preparation areas.

Some companies that have returned to work are rearranging and spacing tables, assigning lunchtimes, or requesting employees eat at their desks to reduce traffic in the space.

With many corporate cafeterias likely staying closed as employees return to the office, shared fridges and microwaves are likely to become more popular. HotLogic makes a low-touch heating device that holds food and keeps it warm for hours.
Voice technology could also let employees use the appliances without needing to touch handles and buttons. Sensory has been developing this kind of solution with appliance makers such as Midas. Equipped with Sensory’s software, Midas’ microwave can be opened and asked to heat food at a specific temperature for a specific amount of time with voice commands.

Companies can also space out appliances like the refrigerator and microwave to further maintain social distancing in the office, if possible.

Cutlery and cups, if provided by the office, will likely be disposable. The CDC recommends replacing high-touch communal snacks and beverages, including the office coffee pot and water cooler, with individually packaged servings or bottles.

Some offices may do away with the coffee machine entirely to prevent widespread infection, while Denmark-based company TopBrewer makes a contactless coffee dispenser that allows individuals to create an order from their mobile device, and has been installed in offices by companies like Xerox.
For workplaces that depend on corporate cafeterias to feed employees, on-site food services, particularly those with buffets and self-serve dining options, offer more opportunities for contamination that companies may not want to risk.

Another option for feeding employees is individually packaged delivery options offered by startups that help to make food delivery more seamless for offices of all sizes.

In May 2020, UK-based Compass Group acquired startup Feedr for $24M. Through Feedr, employees make an individual meal order from a rotating menu before a specified time. The orders are aggregated and sent to local restaurants for preparation and delivery. The company has previously disclosed clients like Airbnb and PwC.

Similarly, Foodee offers office lunch delivery services. UK-based Nutrifix is another company lunch solution that creates a custom meal plan based on the individual's stated health goals or dietary restrictions. Both companies offer options for employer subsidies.
Before Covid-19, vending machines were also expanding their selection to fresh food and made-to-order options. Basil Street Pizza, Farmer’s Fridge, Yo-Kai Express, and Chowbotics offer foods from salad to pizza to ramen. Some even accept mobile orders, allowing employees to reserve food or pre-order coffee drinks, like Farmer’s Fridge and Briggo’s coffee robot, respectively.

While people may be sitting separately, employers can use video conferencing and remote collaboration tools to create virtual spaces for employees to socialize across locations.

**WHY IT MATTERS**

Like the bathroom, the kitchen is another high-touch, high-traffic area of the office that nearly every employee visits throughout the day.

Consumer behavior in China, which may predict future behavior as other countries open up, points a reluctance to visit restaurants even as the reopening proceeds, which means people may have the same feelings about company cafeterias and group meals in the short-term.

Additionally, companies will not want to risk the liability of a Covid-19 spread in food areas.
ADVANTAGES: LESS FOOD WASTE, MORE FLEXIBILITY

Startups focused on workplace lunch programs delivering individual meals can scale up or down based on the employees in the office that day, accommodate a wide range of dietary preferences and restrictions, and help reduce food waste.

Fresh vending machines offer similar advantages. Farmer’s Fridge typically only sees around 5% of the food go to waste every day, due to an algorithm that determines what foods to stock in each machine.

Additionally, some smart vending machines handle their own restocking based on sensors and data collected. Since they do not rely on humans to serve the food and can be used at any time of the day, this is more accommodating to employees who may be eating at staggered meal times or working abnormal hours.

In many cases, both of these options could result in cost savings, particularly for companies who must make a choice to operate full-fledged cafeterias despite having fewer people overall in the office.
**CHALLENGES: SPACE AND COST RESTRAINTS**

Overall the high number of touch points in the kitchen — from the microwave to tables — and high traffic can make it a difficult area to clean.

Depending on the size and layout of the office, fitting in new vending machines may not be feasible, and depending on the number of employees, the cost can be high. Sally, the fresh salad vending machine by Chowbotics, costs approximately $35K, and also offers monthly financing for 36 or 60 months.

Another concern is employee frustration caused by long lines, especially if there is a limited number of machines. For reference, Sally by Chowbotics takes approximately 2 minutes to make each salad.

**LOOKING AHEAD: MOBILE CHECKOUT MAY ENTER WORKPLACE FOOD SETTINGS**

With the push towards contactless services and limited interactions, smart vending machines serving fresh and higher-quality meals (as opposed to snack foods) may become more permanent in some office settings once the pandemic subsides. In some countries like Japan, vending machines are already quite popular across the country.

Mobile order and checkout may make its way into the office food settings. A 2019 survey of US employees found that 82% of workers would buy more food from the office cafeteria if there was an option to order beforehand and pick it up at a designated location.
Over 58% would make at least one extra visit a week if technologies like touch screen kiosks and mobile or in-app payments were in place.

Additionally, office workers reported interest in a lunch experience that is not only streamlined but personalized. Companies could use data collected from apps to offer targeted employee incentives and to reduce food waste.

While this survey by Omnico Group took place in 2019, these stats might be even higher now in the wake of Covid-19.

While people prioritize convenience and quality food, eventually employees will also look forward to having the kitchen back as space for collaboration and socialization when Covid-19 is no longer top of mind.

*Our cashier-less tech market map can be found [here](#). We discuss cashier-less checkout and other trends in our 2020 State of Retail Tech report.*
On-the-go HR: employee wellness, communication, and engagement tools

On her way out the office, Rachel remembers that human resources recently granted employees free memberships to a mental health app, so she downloads a guided mindfulness practice to listen to on the way home.

New and existing HR functions are being emphasized as employees return to the office and others continue remote work. Three main focuses for these tools are communication, engagement and manager effectiveness, and employee wellness.

Swift and effective employee communication is critical to disparate workforces in the midst of a pandemic. Particularly in the case of someone receiving a positive diagnosis, notifying those who were in prolonged contact with that person (while maintaining confidentiality) will be vital to preventing an outbreak.

Mobile is rising as a key way to enable connectivity across full-time and non-desk employees.

To this end, startups like Beekeeper ($86M in total disclosed funding), Staffbase ($34M), and Happeo ($20M), all aim to improve internal company communication and emphasize mobile communication.

Beekeeper allows employers to send important notifications to employees across mobile and desktop, and receive a confirmation when workers have read their message, while South African startup Wyzetalk has a Covid-19 crisis communication solution designed for businesses.
Another area of focus with a more distributed workforce will be tools that measure team engagement and manager effectiveness.

**Lattice** is a performance management platform that enables teams to visualize and track employee engagement through dashboards, heat maps, and program scoring to provide continuous feedback. It is also highly rated for ease of use. Its customer list has included companies like Reddit, Slack, and Glossier.

Denmark-based startup **Peakon** uses data and machine learning to collect and analyze employee feedback from web and mobile channels to identify ways to improve.
Similarly CoachHub, headquartered in Germany, helps teams manage remote workers, focus on their development, and give personalized feedback to coach employees at every level of the company. It lists Danone, BNP Paribas, and Hello Fresh as clients.

Another focus area is overall employee wellness, from physical to mental to financial health.

For instance, telehealth platforms and resources — especially those with specific tools to manage chronic conditions — may be more critical as more people avoid in-office doctor visits to avoid Covid-19 exposure. WellDoc ($65M in total disclosed funding) offers support for diabetes and hypertension.

Mental health will also receive more focus going forward. Corporates have emphasized the growing need for mental health solutions on recent earnings calls: In Q2’20, mentions of mental health and wellness more than quadrupled from Q1’20, as companies reacted to the ongoing crisis.

Source: CB Insights
Employers are looking into expanding workplace wellness benefits and resources that they can provide, such as telehealth and virtual coaching services. For example, Starbucks recently partnered with Lyra Health to bring its mental health therapy/coach service to employees.

**Ginger.io, Spring Health, Unmind, and Talkspace** are examples of startups offering mental health or mindfulness services and that have corporate programs in place.

Japan-based **lafool** evaluates stress levels among employees and identifies underlying causes to propose a solution that optimally reduces stress factors. Another employee wellness startup, **Zoojoo**, found in a study conducted with SHRM India that stress levels fell 25% after individuals used its platform.

Another dimension of employee wellness is financial health. Employees may also be more attuned to their financial status if they feel less secure about the global economic outlook. Financial wellness solutions like **BrightPlan** ($37M in disclosed funding) and **LearnLux** ($7M in disclosed funding) help employees reach their financial goals in the short- and long-term.

**Source:** BrightPlan

Other platforms for helping employees better manage their finances include **Even**, **Steady**, and UK-based **Wagestream**.
WHY IT MATTERS

Employees will need to be equipped with the resources to handle a new reality and become re-acclimated to a different work environment.

On the other hand, HR teams and managers will need the resources to effectively manage employees under many different working conditions, from those coming in the office, those who remain remote, frontline workers, and those that do a combination of any of the above.

Clear communication and expectations between employers and employees are also critical as companies will also be concerned about not only keeping employees safe, but reducing their liability in case of an office infection.

Finally, wellness has become a greater priority for employers. Globally, the pandemic has heightened levels of depression, anxiety, and distress among individuals, and the United Nations has also described an imminent mental health crisis.

Prior to the pandemic, mental illness cost more than $1T to the global economy every year, according to the UN, and could cost more as the pandemic impacts mental health.
ADVANTAGES: IMPROVING PERFORMANCE AND RETENTION

Many of these tools provide more personal and individualized coaching tools to managers, which may help boost performance and better identify concerns compared to traditional approaches.

The analytics provided by many HR tech solutions can help teams refine their strategy, improve retention, and boost key employee metrics.

Additionally, employee wellness tools may lead to increased retention and higher productivity. A survey by Optum found that participants of employer wellness programs were 1.5X more likely to stay with the company and were nearly 3X as likely to recommend it to others.

CHALLENGES: EMPLOYEE MORALE AND PRIVACY ARE CRUCIAL

In the short term, businesses could be more cost-conscious and less willing to try new services as companies everywhere rethink their costs.

Employee morale and privacy will be among the challenges HR teams face as employees deal with more monitoring technologies and invasive measures, such as filling out health surveys and disclosing pre-existing conditions. It is also important to do as much as possible to prevent stigma around those who are diagnosed positively.

While a recent study called into question the effectiveness of workplace wellness programs and their resulting health benefits, employees may be more inclined to participate given the unique circumstances of Covid-19, heightened economic uncertainty, and limited access to in-person doctor visits.
LOOKING AHEAD: HR TECH PROVIDES NEW WAYS TO MANAGE, TRAIN, AND RECRUIT EMPLOYEES

HR departments are increasingly implementing software to modernize their recruiting, talent, and administrative processes. As businesses begin to recover and the Covid-19 outbreak dissipates, demand for new HR tech offerings could ramp up.

Mobile-accessible tools will be essential to ensure all workers are engaged, from non-desk employees to those regularly working in the office. Platforms with intuitive design and ease of use will be critical to ensure the platform is accessible to everyone in the company.

Wellness resources will continue to be important moving forward. Even when the concern of Covid-19 infection fades into the background, things will never be exactly the same as before and continue to shift for some time, necessitating continued support for employees as adjustments take place.

When Covid-19 infection is no longer top-of-mind, expect HR departments to expand their focus from employee communication, engagement, and wellness to also include areas like recruiting and development.

In addition to the solutions that coach and develop individual managers, solutions for trainings across departments and employees at all levels of the organization will also be important. AR/VR tools are increasingly utilized in this area. For example, startup Mursion teaches sales, customer service, and leadership skills through interactions with avatars in virtual reality to simulate and analyze practice conversations. Vantage Point uses VR to train employees in topics surrounding diversity, equity, and inclusion & sexual harassment.
As the office becomes more decentralized, HR will place a greater focus on equipping employees through remote training programs and apps for professional development. Some startups are focused on specific groups; ExecOnline targets senior and middle managers, while Landit focuses on women and diverse talent.

Companies may find digital solutions and coaching apps to be more cost-effective compared to in-person options, and may look to allocate more of their budget to these products.

For finding and retaining talent, recruiting tech attracts the most deals from the most active investors in the HR tech space. From companies tackling alternative talent pipelines like WhiteHat to relationship tracking by Beamery, this is a key area of focus for HR tech startups. Startups like Joonko focus on helping companies recruit diverse talent.

In addition to the above priorities of finding talent and professional development, companies may look to upskill or reskill workers within the company to fill more specialized positions. This may also lead to the creation of more remote-friendly roles.
Guild, a startup that provides education benefits to employees, estimates that over half the workforce (54%) will need to be reskilled or retrained within the next two years. Companies like FutureFit AI and Coursera are also responding to a growing need for upskilling opportunities.

Finally, to automate tasks, expect rising interest for technologies such as robotic process automation (RPA) that can tackle manual workflows and free up workers for more complex work (clients can view our Robotic Process Automation Collection here).

Clients can also view our full HR Tech Collection, as well as our brief highlighting 13 startups to watch for employee mental health and wellness in the face of Covid-19. Our market map of 50+ companies serving corporate employees and other learners is here.
Beyond the office: cybersecurity and at-home network security

After Rachel logs in from her company-issued laptop, she is prompted with a new security patch to update her applications.

Cybersecurity is no new threat.

However, as an unprecedented portion of the workforce has been relegated to working from home, IT teams have faced new challenges, from less than optimal at-home network security to more targeted business email compromise schemes.

As a large portion of workers is forced to use personal devices and internet connections, companies are faced with a new frontier to defend. These personal devices and networks are typically less secure, as they were never intended for protecting sensitive business information.

In addition to subpar security, as employees juggle child care and other tasks at home, cyber hygiene may not be top of mind in the same way it would be in office.

In fact, 48% of employees said they were less likely to follow safe data practices when working from home, according to a survey from email security platform Tessian.

This new reality has left many organizations under prepared amid the backdrop of growing cyberattacks and the explosion in e-commerce transactions, materially increasing the amount of personally identifiable information (PII) to protect.
Business email compromise (BEC), where attackers impersonate a corporate email address to fraudulently redirect funds, continues to be one of the most common forms of cyberattacks and takes on several forms.

New variations of BEC have emerged during the pandemic. Between the second and third weeks of March, the instances of coronavirus-themed phishing attempts surged 463%, according to email security platform Abnormal Security.

Further, while the C-suite remains the main target for phishing attempts, Q1'20 saw a 75% increase in attacks on finance employees as cybercriminals focus their efforts on payments and invoices.

Part of the solution is training employees to understand safe practices to identify and avoid malicious actors. For example, Austin-based Living Security focuses specifically on developing positive security habits in employees using behavioral science and interactive platforms.

But training alone may not be enough. Notably, 67% of cybersecurity execs indicated they were concerned about malicious employees, according to a WSJ survey.
Tessian, a London-based data loss-prevention platform, saw an opportunity to apply technology to prevent employees from improperly using and transferring data.

The company focuses inward, leveraging machine learning to monitor employee inbox activity to identify normal and abnormal behavior. By doing so, Tessian is able to mitigate the likelihood of sensitive or confidential data being sent to the wrong individual.

WHY IT MATTERS

With more people transacting and doing business online than ever, organizations need to prioritize safeguarding business operations as well as sensitive information including customer data and even employee health data. A failure to do so would have major financial and reputational consequences.

Over the last 4 years, companies and individuals lost an estimated $26B from a combination of business email compromise and email account compromise schemes, according to the FBI. Cybercriminals are increasingly focused on invoice and payment fraud schemes, which typically have higher dollar values than individual payroll schemes, increasing the stakes. In May 2020, the weekly average rate of invoice and payment fraud attacks spiked 200%, with 36% more organizations experiencing these kinds of attacks, according to Abnormal Security.
ADVANTAGES: UPFRONT INVESTMENT LEADS TO EARLIER DETECTION AND REMEDIATION

Employee training programs tailored to remote work best practices are a relatively easy-to-implement solution to keep employees vigilant on cyber risks. Companies who commit to cybersecurity investment stop more attacks, find and fix breaches faster, and are able to reduce the impact of those breaches. However, real investments need to be made in order to reap the benefits.

Early detection and remediation have real cost benefits. Companies that are able to improve performance could potentially reduce costs per attack by 72%, translating to $6M in annual savings, according to Accenture.

Startups like Israel-based Biocatch use an algorithm to understand abnormal activity.

The company offers behavioral authentication and threat detection solutions for mobile and web applications. Biocatch has a module specifically for social engineering scams that works to track suspicious behavior by comparing activity against legitimate transactions. The company raised a $145M Series C in April 2020.
CHALLENGES: THE MOVE ONLINE BRINGS A GROWING BODY OF SENSITIVE DATA

Companies are increasingly outsourcing various internal functions to third-party vendors, which need to be rigorously vetted as they pose another endpoint that could cause a breach or data leak.

Additionally, the explosion in e-commerce activity increases the amount of sensitive data companies and their vendors need to protect.

![E-commerce penetration is exploding](image)

Source: CB Insights, Bank of America, US Dept of Commerce, ShawSpring Research

As the threat of cybersecurity attacks intensifies, the costs to cybersecurity components have grown in lockstep.

Cybersecurity costs have reached unsustainable levels — over the last two years, many security components including network security, threat detection, and security monitoring saw cost increases up to 25%.
LOOKING AHEAD: CYBERSECURITY WILL BE A TOP PRIORITY FOR YEARS TO COME

Cybersecurity will only continue to increase in importance as many employers continue some of their work from home policies once coronavirus subsides. Global cybersecurity spending is forecasted to reach $134B by 2022.

Beyond BEC, which has more firm-specific impact, another major concern with even larger ramifications relates to consumer data protection.

General Data Protection Regulation (GDPR), which governs data privacy laws in the EU, has set a precedent for regulating the way companies handle consumer data. In Q1’20 alone, GDPR fines totaled nearly $60M.

Another development to pay attention to is the growth and evolution of the cyber insurance industry. Unlike most other insurance policies, the underwriting for cybersecurity is relatively nascent. But a growing number of carriers are beginning to underwrite cyber risk, with US cyber premiums increasing 11% in 2019.

Cybersecurity will inevitably evolve from an operational concern to chief executives’ top priorities.

*Our 2020 Cyber Defenders report can be found [here](#).*
Conclusion: The post-crisis office

Without a doubt, going into the office will be a very different experience in the coming months. Overall employee safety, privacy, and morale will be top of mind.

With new sanitation and safety policies in place, companies will want to clearly communicate to employees the changes they are implementing to prevent infection and create a safe yet friendly work environment — and balance this with support and resources to re-acclimate to a changing situation. This will create a safer and more reassuring environment for employees to return to work.

While some changes may be temporary, Covid-19 will have long-lasting impacts on the workplace even after the peak of the crisis has passed. Flexible work schedules may become the norm, with employees splitting their time between working remotely and coming into the office. Remote collaboration tools and enhanced cybersecurity measures will make it more seamless and safe.

Smart building investments may create a healthier and more pleasant work environment, even when Covid-19 is no longer a primary concern. HR departments can deploy new tools to keep the company connected, create a solid employee wellness program, and provide professional and new skill development to workers no matter where they are seated.

While its features might change, the office remains a place of connection and innovation that is hard for companies to replicate with a fully remote workforce.
This report was created with data from CB Insights’ emerging technology insights platform, which offers clarity into emerging tech and new business strategies through tools like:

- **Earnings Transcripts Search Engine & Analytics** to get an information edge on competitors’ and incumbents’ strategies
- **Patent Analytics** to see where innovation is happening next
- **Company Mosaic Scores** to evaluate startup health, based on our National Science Foundation-backed algorithm
- **Business Relationships** to quickly see a company’s competitors, partners, and more
- **Market Sizing Tools** to visualize market growth and spot the next big opportunity

If you aren't already a client, [sign up for a free trial](#) to learn more about our platform.