



Using Technology to Protect Essential Workers

BY STEFAN JASKULAK AND CASEY HIATT

Public health officers agree that outdoor open spaces provide an essential service during this unprecedented pandemic, and Midpeninsula Regional Open Space District (Midpen) looks after 65,000 acres of it, including hundreds of miles of trail. With shelter-in-place orders in effect in the San Francisco Bay area, there are limited venues for people to escape, to exercise, and to nourish their mental health. As a result, Midpen's 26 open space preserves are busier than ever, with parking lots reaching capacity daily and ranger services in high demand. Staff also work year-round to help plants and animals thrive throughout the greater Santa Cruz Mountain region, a job that includes fire management. Field and maintenance crews have to report onsite daily, so Midpen has to maintain productivity and keep its essential workers safe.

KEEPING STAFF SAFE

The majority of Midpen's staff were able to pivot to remote work, but a significant number of essential workers, such as rangers and facilities staff, have needed to report onsite. Midpen is using technology as one way to help ensure staff safety, creating a COVID-19 Health Check Application that confirms staff are healthy before they report onsite.

Midpen needed a digital application so supervisors wouldn't have to manually verify the health status of each employee before they came to work, which would be time-consuming, potentially dangerous, and prone to human error. There is also the need to comply with HIPAA medical privacy laws. Until a safe and effective vaccine is available, a technological solution is crucial.

The technological solutions that were initially available to specifically address the disease (beyond mask wearing, social distancing, and hand washing) were both immature and expensive, although this is rapidly changing. Commercial technologies started at \$10,000, and some vendors also charged for every check-in. Obviously, this was not ideal for a local government agency.

Cost is not the only factor. The public procurement process takes time, and every day the system wasn't active and online increased the health risks for Midpen staff. Therefore, we decided to quickly develop a custom application.

Midpen's COVID-19 Health Check Application streamlines daily COVID-19 self-health checks. Employees use it to complete a self-health screening, and the application automatically notifies the supervisor if they are healthy to

Created in 1972, Midpen is an independent special district that has preserved nearly 65,000 acres of public land and manages 26 open space preserves.

report into work. Completing this health screening is mandatory for employees who need to report onsite. The process is simple and quick to complete, and it focuses on providing a good user experience. Privacy is ensured because no data are stored and no details are shared. It is accessible via any device (smart phone, tablet, or computer).

The application is a digital checklist based on Centers for Disease Control and Prevention (CDC) guidelines, which staff update as the CDC changes its recommendations. Research has shown time and time again that checklists drastically help eliminate costly and potentially life-threatening errors. The aviation, aerospace, and medical industries have come to rely on checklists for this reason.

Once an employee completes the survey questions, the application will determine whether to recommend that they remain at home or report to work onsite. The result is displayed on the application and an additional email notification sent to both the employee and their supervisor. If an employee is guided to stay home, the Human Resources Department (HR) is notified as well so they can conduct appropriate contact tracing and conduct cleaning protocols.

The application is compliant with HIPAA laws because it does not store any data. Unlike most

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web applications, the Midpen COVID-19 Health Check application only runs on a web browser as a front-end client; it is not a traditional server-based web application. While there is some communication with the Microsoft SharePoint application programming interface (API), no data are retained. The classic Microsoft SharePoint API allows the application to automate notifications and conduct employee and supervisor lookups, which include important data such as names and emails.

A good user experience is essential to ensuring that employees continue to use the application. Convenience and time savings are huge factors. The application therefore has a reactive user interface, meaning that it visually adjusts to different screen sizes. Users can access it from their computers or smartphones, and buttons and form fields will adapt to either click- or touch-

MidPen's COVID-19 Health Check Application automates the health screening process necessary for onsite work.

Screen 1: Title Page

Image credit: Desires Ho for the Innovative Genomics Institute.

Midpen COVID-19 Health Check

This Health Check, as outlined in the return to work protocol, determines whether or not you should come to work due to COVID-19. It is not a medical diagnosis. It is based on CDC COVID-19 symptom guidelines. If you are encountering any issues or problems, please click here to email IT with details.

Non-COVID-19 related injuries or illnesses

If you are not coming in to work because of a non-COVID-19 related injury or illness you do not

Screen 2: Emergency Instructions

If this is an emergency, stop and call 911

If you have any of the following symptoms, call 911 immediately:

- constant chest pain or pressure
- severe difficulty breathing
- severe shortness of breath
- constant dizziness / lightheadedness
- slurred speech
- extreme difficulty waking up
- any other extreme or life-threatening symptoms

Click here to lookup supervisor email(s)

Find your supervisor's email

(Start typing a name, select a person from the dropdown list, and click on a button below)

Enter a name or email address...

Update Main Supervisor Email

Update Optional Supervisor Email

Screen 3: Supervisor Email Entry

* 1. Enter the email of the supervisor you would like to notify.

supervisor@corp.com

2. To notify multiple supervisors simultaneously, enter the email of other supervisor you would like to notify.

Optional Other Supervisor Email

* 3. Is your temperature at or above 100°F?

No ☒ Yes

* 4. Are you experiencing coughing or shortness of breath that is not related to pre-existing conditions or allergies?

No ☒ Yes

* 5. Are you experiencing any of the following symptoms which are NOT caused by another illness, condition, or injury? (Reminder - if you will not be coming into work because of an injury or illness that is not related to COVID-19, you do not need to fill out this form and you may contact your supervisor as per normal routine procedure.):

☐ Headache, Chills or Body Shakes

Screen 4: Symptom Checklist

* 5. Are you experiencing any of the following symptoms which are NOT caused by another illness, condition, or injury? (Reminder - if you will not be coming into work because of an injury or illness that is not related to COVID-19, you do not need to fill out this form and you may contact your supervisor as per normal routine procedure.):

☐ Headache, Chills or Body Shakes

☐ Sore Throat

☐ Muscle Pain or Body Aches Not Associated with Overexertion or Exercise

☐ Vomiting

☐ Diarrhea, or Recent Loss of Taste or Smell?

☒ None

* 6. Since you last completed this health check, is anyone in your household experiencing COVID-19 symptoms (described in the previous questions #3-5) or has been advised by a physician to self-isolate?

No ☒ Yes

The Health Check application has been a critical step in ensuring that staff are healthy when they report onsite and in keeping all staff safe.

based controls. It also automatically determines the email addresses of the user and the user's supervisor. When needed, it allows users to look up and enter more than one supervisor's email (some employees have a different supervisor depending on the day of the week).

The application has been used daily by Midpen's 70 essential workers since mid-March, and it's been a critical step in ensuring that staff are healthy when they report onsite and in keeping all staff safe. Employees appreciate how easy it is to use, and that all staff are required to pass the health check reporting onsite. It helps staff feel safe.

The Midpen COVID-19 Health Check Application is open source and available to any organization that needs it. For details, please contact us at it@openspace.org.

ADAPTING TO CHANGE

The global pandemic caught most organizations by surprise. Midpen was able to adapt by quickly deploying communication tools that were suited for remote work, and when applications for managing the epidemic were not readily available, our internal IT team created its own custom solution. As a result, Midpen's staff has remained entirely productive and continues to deliver on Midpen's mission safely.

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Remote Work Technology

Setting the Organization Up for Success

Over the past several years, Midpen has cultivated a resilient, mobile-first approach to operating. While most of our work was conducted in the office, the IT vision was geared toward providing staff with flexible tools to allow them to work where and when they needed. The first step was to move everyone to laptop computers and install Wi-Fi in all office buildings, providing staff with the ability to be more effective in meetings and to work from multiple field offices that are spread across the San Francisco Peninsula. Along with the laptops came VPN implementation, allowing staff to access on-premise files and systems.

Five years ago, Midpen conducted a comprehensive IT strategic plan that outlined critical IT infrastructure improvements and recommendations for cloud migration. As a result, the organization made many critical upgrades and improvements that have made remote work possible for the entire organization. These include:

- **Office 365 implementation**, which standardizes office productivity tools, hosts documents in the cloud for access everywhere, and provides numerous security benefits.
- **Migrating email to the cloud to improve performance**, increase email storage space, and enable staff to access email without a VPN connection, freeing up bandwidth for staff who need to access on-premise enterprise solutions remotely.

- **VPN and server upgrades** that allow all staff members to log in to the VPN connection simultaneously.
- **SharePoint document repository**, a document management and collaboration system integrated with Office 365, which provides a foundation for intranet and project management remotely.

Remote work technology is only part of the puzzle; keeping the system safe and secure is the other critical piece. We spent the last year and a half educating staff on the importance of cybersecurity. By conducting simulated phishing campaigns and education via KnowBe4 and in-person training sessions, cybersecurity awareness has greatly increased.

COVID-19 ADAPTATION

When Midpen learned that COVID-19 had arrived in California in February, we took action to prepare for a physical office closure. While we've had a mobile-first operating approach to technology implementation, administrative staff worked in the office most of the time. Earnestly preparing staff to work remotely and training staff on remote communication tools was crucial. We took the following actions to prepare for a potential closure:

- **Swift implementation of Microsoft Teams.** While a small portion of Midpen staff was already using Teams, everyone had to become familiar with it as the organization's primary communication tool. We conducted numerous in-person training sessions and created a variety of how-to documents.
- **SharePoint file migration and refresher training.** SharePoint is heavily used, but there are still many files on on-premise servers. To prepare for remote work, hundreds of files were migrated to SharePoint, and numerous SharePoint refresher training sessions were conducted.
- **Rapid implementation of Adobe Sign.** Needing a way to route contracts and documents for electronic signature, we quickly acquired and deployed Adobe Sign a week before office-wide remote work was required.
- **Remote work test days.** We conducted two remote work test days before the shelter-in-place orders went into place, enabling staff to address any technical issues, including troubleshooting any VPN connection issues, before the office closed.

A shelter-in-place order was issued on March 16, effective the next day, and Midpen was able to make a quick and trouble-free transition. 🏡

