TRANSFORMATIVE
HEALTH SOLUTIONS

COVID19 Automated Contact Tracing
For The Workplace

Digital Contact Tracer

Coming Soon

NON INVASIVE

Staff simply wear a lightweight wristband. No configuration. Not dependent on apps, charging devices etc. Simply issue bands, plug in communications gateways. Set it and forget it.

PRIVACY PROTECTED

Devices carry no personally identifying information nor track location data. Contacts are only identified if people they have been in close contact with test positive for COVID19.

REDUCE LOST TIME

Avoid work disruptions by only quarantining those who are known to have had close contact.

ACCURATE TO +/- 10CM

People recall at best 70-80% of their very recent close contacts with recall rates falling rapidly as time since contact increases. Smart bands capture accurate band-to-band proximity and duration data accurate to 10cm.

RELIABLE

Simple devices that leverage nearfield peer-to-peer communication. Anonymized proximity data payloads automatically pushed to secure cloud data store.

COST EFFECTIVE

Bands are low cost. Peer-to-peer communications means no complex networking. Gateways only required at points of ingress and egress.

Purpose

Our automated smart wristband contact tracing solution is a critical tool in avoiding exponential spread of coronavirus and the disruption caused when staff test positive. If you quickly and comprehensively identify everyone that has been a recent close contact of anyone testing positive you can act to rapidly quarantine and test those individuals who you know have been exposed. By so doing you break the chain of virus spread that can lead to an exponential growth of infections and avoid disrupting workers who have not been exposed. Our automated Contact Tracer system is also pre-integrated into our end-to-end COVID management platform that helps facilities manage and optimize COVID testing, symptom checking, work authorization, building access, visitor management, staff compliance, quarantine management, and even remote vitals monitoring of those who get sick.

Background

Transformative stood up a statewide mobile COVID testing program on behalf of the Commonweath of Massachusetts targetted at our most vulnerable populations living in group homes and long term care facilities. From mid April to mid July we tested 40,000 people at 2,200 locations with a median test to result time of 36 hours. In partnership with Quest Diagnostics and several other labs we have testing media and lab capacity for over 20,000 tests per day and are expanding to support testing in more states. We added real-time lab integration and automated test resulting by email, text and phone all hosted in a secure HIPAA compliant cloud application. Building on this experience we have created solutions to help employers manage the process of restarting while minimizing risk and disruption and avoiding exponential spread.

Approach

In our database of over 40,000 COVID19 tests over 95% of those we tested were asymptomatic and **90% of positives had no symptoms** at time of test. This tells us that only checking for individuals exhibiting symptoms, while necessary, is far from sufficient. The majority of transmission will come from the asymptomatic and presymptomatic which makes in-school contact tracing and rapid response COVID testing some of the most effective tools in the fight against COVID19.

How It Works

STEP 1: Install gateway devices at points of ingress and egress

STEP 2: Upload rosters of staff, assign bands

STEP 3: Issue wristband to each person

STEP 4: When an individual is identified as COVID positive system generates history of their recent close contacts

STEP 5: Close contacts are alerted and scheduled for COVID testing and/or self quarantine

STEP 6: Optionally, integrate with our daily symptom checking, building access and entryway temperature checking solutions

The Technology

We use peer-to-peer Ultra Wide Band (UWB) beacon technology that is integrated into easy to wear wristbands. This approach has a number of advantages over other approaches:

- Accurate for detecting proximity and duration (to <10 cm)
- Not reliant on complex networking technologies
- Not dependent on personal devices like smartphones
- Simple to set up with no configuration
- Long battery life, maintenance free
- Works indoors and outdoors
- Devices hold no private data
- Low cost to deploy at scale

UWB beacons act likes a smart lighthouse: they repeatedly transmits a single signal that other devices can see. Instead of emitting visible light, though, it broadcasts a radio signal that is made up of a combination of letters and numbers transmitted on a regular interval of approximately 1/10th of a second. Another beacon can "see" a beacon once it's in range, much like sailors looking for a lighthouse to know where they are. Our software is able to calculate the distance bewteen the two beacons and measure the duration of the "prolonged close contact". Each close contact event is logged and uploaded to our secure cloud servers where its is not identified to an individual. Once there is a known positive COVID case identified within your facility the software will identify all of the close contacts that person had over the previous 14 days and automatically alert them without identifying who the close contact was with. These individuals can then self quarantine and be scheduled for a COVID test (which may be reimbursable by insurance even if asymptomatic since there is now a known and documented "prolonged close contact" event).

Tags ranging with each other, calculate real time distance

Up to 0.1 meter precision

Tag to tag distance

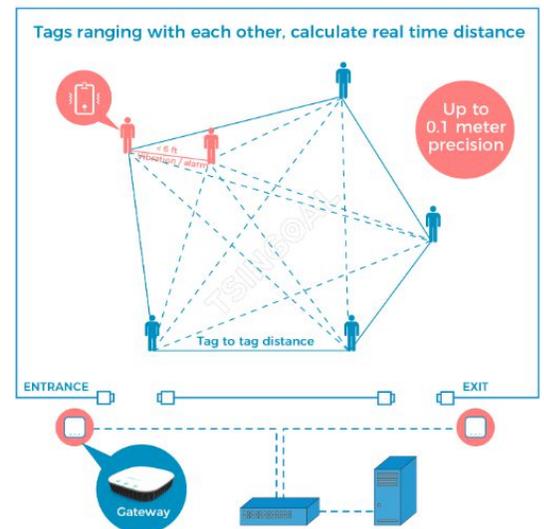ENTRANCE   EXIT

Gateway

The Result

- Automatically track prolonged close contacts between staff and visitors
- Monitor workplace social distancing behavior and inform policy setting
- Identify activities, times and places that create the most risk of virus spread
- Break the chain and stamp out virus spread before it becomes uncontrollable
- Optimize and evolve policies and tactics based on granular data down to the workgroup level
- Maximize staff confidence and compliance with policies and guidelines
- Support the health and well being of infected individuals

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INTEGRATED PLATFORM

Digital Contact Tracer works standalone for contact tracing or as part of our COVID19 management platform that can manage daily symptom checks, work authorization, building access, visitors, temperature checks, social distancing, COVID testing and resulting, quarantine management an even remote vitals monitoring for the sick.

EASY TO IMPLEMENT

Proven UWB technology. No maintenance. Long battery life. Data pushed automatically to secure cloud by gateway devices placed at workplace ingress and egress points.

RUGGEDIZED

Devices are rugged, water resistant and low cost. They are able to stand up to the rigors of daily work life in both indoor and outdoor environments.

LEARNING BUILT IN

Data on social distancing behavior will inform your policies and tactics. Use our data-driven approach to learn, optimize and evolve tactics down to the individual work group.

DEVICES STILL USEFUL AFTER COVID19

Devices can act as security badges, detect falls, call for help, or track assets. Wristband can be a data hub to capture data from other Bluetooth monitoring devices, no smart phone required!

Multiple Device Formats

Smart Security Badge

Plug-in Bluetooth Gateways

Smart Writsband

UWB Gateway

Why Contact Trace?

Our recommendations for rapid contact tracing utilizing mobile technology stem from the ease of COVID-19's transmission by presymptomatic or asymptomatic individuals. Up to half of transmissions may occur from asymptomatic or presymptomatic individuals, and models suggest that the longer the delay between symptom onset and isolation, the lesser likelihood there is for contact tracing to control an outbreak. Together, these characteristics suggest that preventing community transmission of COVID-19 through traditional analog contact tracing alone is difficult. In addition to increased capacity for manual contact tracing programs, technology that enables rapid, distributed digital contact tracing may allow breaking or prevention of community transmission, contributing to efforts to reopen parts of society while preventing new outbreaks. Instantaneous contact alerts will allow potentially exposed individuals to take appropriate action—such as self-isolating, contacting the right public health officials, or seeking testing—while allowing precious public health resources to be focused on confirmed cases. Critically, the speed of digital contact tracing can significantly aid public health professionals in containing outbreaks.

Center For American Progress

Digital Contact Tracing To Contain the Coronavirus

Alternate Technologies

While a variety of approaches have been proposed for mobile proximity tracing and public alerting, none has more potential to be as effective and privacy-protecting as utilizing a hybrid of Bluetooth Low Energy (BLE) and Ultra Wide Band (UWB) technologies. Cell tower, Wi-Fi network data, and GPS have also been proposed, but they are more difficult to utilize in a privacy-protective way and are not reliably precise enough to gauge whether two users' are within 6 feet of each other—an epidemiologically meaningful distance for virus transmission.

Our solution uses energy-efficient BLE for "approximate ranging" then its UWB chipset for precise proximity and dwell time measurement. BLE alone (as used by many seemingly similar devices) is unreliable for measuring proximity (only +/- 6 feet accuracy!). UWB alone is accurate but results in short device battery life. Combining BLE and UWB delivers long battery life and highly precise proximity detection in a wide range of operating environments.