

Leveraging **Digital Intelligence (DI)** And Contact Tracing To Stop The Spread Of Covid-19

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The novel coronavirus outbreak (COVID-19) is creating unprecedented strains on the public-health system worldwide. Digital contact tracing is dominating discussions globally as countries around the world prepare to return to work and ease social-distancing measures. Ending the coronavirus crisis will take time and measured steps, but experts agree that contact tracing technology will be key to a successful transition while mitigating future outbreaks. In a recent [podcast interview with National Public Radio](#), Centers for Disease Control (CDC) Director Robert Redfield said, “the CDC believes contract tracing is a technique we will see [used] heavily in the next coming weeks and months, and mainly on the state and local level.”

Proposed solutions have come from a number of global tech leaders including [Apple and Google](#), but the debate over saving lives versus preserving rights to personal privacy is just beginning. While the American Civil Liberties Union (ACLU) [has praised](#) their efforts, the organization has also [voiced concerns](#) about the risks to privacy and civil rights. The ACLU recently announced that they are working with the Attorney General to find an agreeable approach.

There is a growing call for solutions and the creation of an “independent standards body” to provide guidance on how this type of technology can be safely and effectively implemented while protecting personal privacy.

What Is Contact Tracing?

Contact tracing is not a new concept, but it has traditionally been a very laborious manual task. Until now, nurses and other public-health workers have had to track down people who have crossed paths with newly diagnosed patients so they could test and quarantine those exposed before they showed symptoms or had a chance to spread the virus to others. When done manually, this process [typically takes three days](#) for every new case that’s reported. Given the current circumstances in which thousands of new cases are being reported every day, the sheer volume of infected patients makes an already herculean task extremely challenging not to mention the additional risk it places on public-health and safety personnel by exposing them to infected patients.

Traditional manual contact tracing procedures simply aren’t as efficient and effective as they need to be in the face of a pandemic such as the coronavirus. Digital Intelligence technologies, however, make consent-based contact tracing a viable tool in battling coronavirus and preventing future outbreaks with more accurate and streamlined tracing and notification solutions. The technology can also ease the burden of the data deluge faced by public-health workers. Once cases of Covid-19 have been identified, the locations of where those patients have been in previous weeks can be easily obtained from data stored in their mobile devices. By accessing this data (with the device owner’s consent), new potential outbreak “clusters” can be visually identified, slowing the spread of the virus and flattening the curve, all while protecting the patient’s personal privacy.



The Role of Contact Tracing in the Global Fight Against COVID-19

Implementing digital contact tracing has already helped countries at the forefront of combatting the virus including South Korea and Taiwan. Measures taken in these countries to utilize geolocation data from personal devices significantly reduced the number of new cases.

When patients in South Korea test positive for COVID-19, [government health authorities send regional text alerts](#) notifying residents that someone near them has been diagnosed with the disease. These texts contain links to a central website, which contains more details such as the places infected individuals have recently visited. While this approach has statistically resulted in a [decline of about 90 percent in the past 40 days](#), some healthcare experts fear the decrease in numbers could be due to a lack of testing as the harassment resulting from being outed online has made many people less willing to get tested.

The Taiwanese government is using “[geofencing](#)” to keep 55,000 people under mandatory quarantine in their homes by tracking their cellphone signals and using police enforcement in an effort to control the spread of COVID-19. As of this writing Taiwan has only [400 recorded cases and six deaths](#), despite its close proximity to the epicenter of the outbreak in mainland China.

In North America and Europe, digital contact tracing has been widely proposed by experts for use by health officials but approaches and levels of acceptance have varied. To date, the U.S. has yet to implement a standard and agreed-upon approach to digital contact tracing.

Varied Approaches to Contact Tracing Solutions

Manual contact tracing is a time-consuming process and the patient may not recall all of the details concerning their exact whereabouts over the time period in question. Without these critical pieces of information many more lives are potentially being put at risk. Since time and expediency are vital in controlling an outbreak, frontline health officials need to rethink the way epidemics are tackled. They need to deploy quick-and-effective means of contact tracing to perform outbreak investigation, accelerate detection, and contain the spread of the virus to keep their communities safe.

Cellebrite is among a handful of key companies offering solutions to aid public health and the economic recovery and facilitate the return to a more normalized work environment.

There are three main types of solutions being proposed globally, but the pros and cons of each of these contact-tracing methods vary widely.



1. Signal interception of mobile networks

- **Pros:** Can be easily applied en-masse.
- **Cons:** Results in many false-positives and raises concerns about privacy violations.

2. Contact tracing and information mobile apps

- **Pros:** Opt-in mobile app solutions require voluntary installations, so information would be consent-based.
- **Cons:** Requires wide-spread cooperation. Communities that tend to avoid government interactions may not participate. This could result in very low adoption rates rendering the solution ineffective. The use of singular mobile apps also lack data on the actual whereabouts of infected patients and oftentimes only reveal that the “possibility” of contact is present. Privacy violations are a major concern with app-based contact tracing since it includes contact identification.

3. Consent-based collection of location-data from patients

- **Pros:** Could be adopted on a large scale. Privacy violations are minimized since healthcare professionals can only access the needed location information over a very specific period (2 weeks) with the patient consenting to participate in the program and unlock their phones. Further, there’s no need to rely on a patient’s all-but-impossible recollection of their whereabouts, hour by hour, for the two-week period prior to their being diagnosed.
- **Cons:** While the solution does require a one-on-one interaction between a patient and healthcare professional (and for the device to be in hand), the process is fast (one hour or less) and it provides accurate, extensive location data to provide a more holistic view to visually identify potential new hotspots.

Cellebrite Community Shield

Cellebrite is proposing a solution to help public-health officials deploy consent-based contact-tracing to visualize movements and potential transmission paths. [Community Shield](#) is Cellebrite’s latest offering in the company’s portfolio of digital intelligence solutions for creating a safer world.

The solution is composed of award-winning, field-proven tools from Cellebrite that reconstruct a subject’s movement timeline to identify what locations they visited using location data from their mobile phone. Community Shield brings together unique data-extraction capabilities that limit the information solely to the necessary geographic locations of the patient. With Community Shield, data can be accessed from the broadest range of mobile devices and combined with data review and advanced analytics.



Community Shield's Unique Advantages



Cellebrite's solution is different from those that have recently received a great deal of public attention. Those apps and other technologies have merit and can be used alongside Cellebrite's approach; however, Cellebrite's Community Shield solution has some clear advantages:

- **Driven by health professionals:** At Cellebrite, we believe that any complete answer to contact tracing must include trusted, licensed, healthcare professionals. These heroes working on the front lines provide the credibility and experience to ensure the greatest trust and widest use by patients. Community Shield draws on the experience, credibility, and professionalism of healthcare professionals to drive the program—a key component that will likely maximize patient and community participation.
- **No downloading required:** One of the important and unique aspects of Community Shield is that no apps are downloaded and nothing in the device OS is affected, all of which are stipulations required by other solutions that could remain in effect for the lifetime of the device. Those factors have been cited as barriers to entry and could increase the reticence of patients in participating.
- **Widespread deployment is not necessary:** Cellebrite limits the number of devices needed to achieve success whereas participation by at least 60% of the population is required with other contact-tracing apps.



- **Extremely Accurate Results:** Community Shield derives its data solely from geographically based information and provides an extremely accurate re-creation of a patient's locations. App-based solutions, such as those relying on Bluetooth, can lead to a very high incident of false positives. An example of a false-positive alert would include being incorrectly notified that you are near someone who has recently tested positive for Coronavirus or you are, in fact, near a patient but separated and not immediately susceptible, such as two cars stopped at a red light.
- **Data Collection Takes Little Time:** With Community Shield, the collection of data takes less than an hour and, in most cases, can be gathered in less than an hour.
- **Ability to Cross-reference Sources:** Community Shield's analytics engine can also cross-reference multiple phone owners to track commonalities and visually identify potential new clusters.

Preparing for the Future

Companies like Cellebrite are charting a path toward a "new normal" but a "normal," nonetheless. In this new era, we will accept apps and other technologies that help identify sick and immune people, map our locations relative to others, and continue to build upon a mobile world that is safer even when we can't see the danger lying ahead.

This unprecedented pandemic and the resulting "new normal" could help fast track the creation of a third-party body to set standards and best practices for governments and public-health agencies, in collaboration with citizens, to leverage technology that curbs the impact that disease can have on society. Analytics may be the single most important digital asset that can be applied to lessen the impact of the current pandemic and combat future outbreaks. It is the same technology law enforcement is using today to ensure homicide, missing children, and other important cases move forward.

For more than 20 years, Cellebrite has supported those that work to protect our communities from threats with technology solutions that keep us safe. Community Shield now empowers our healthcare frontline heroes to do their jobs while minimizing their health risks. The same rigorous user agreements and privacy protections that we enforce for our public sector and enterprise offerings apply here.

In regard to COVID-19, the days ahead will no doubt challenge all of us in ways we cannot begin to imagine. Cooperation between public-health officials and their respective governments will be critical and the sharing of information paramount as we all work in partnership to deal with the current health crisis.

Cellebrite is continually working with its partners to ensure we support them as their challenges remain fluid. While our national boundaries may separate us, we are united by a global collaborative effort to limit the impact and eradicate COVID-19. As organizations and as individuals around the world fighting together to combat a very potent and deadly enemy, we will continue to support the lawful use of technology to prevent the spread of the COVID-19 virus.

To learn more about Community Shield, [click here](#).



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About Cellebrite

For more than 20 years, Cellebrite has been the global leader and premiere provider of integrated digital intelligence solutions to law enforcement, military, government, and private enterprises worldwide. We help resolve investigations faster by addressing the growing challenges of an expanding digital world.

Developed in close partnership with our customers, our integrated suite of digital intelligence software, solutions, and training include: access to all devices, digital platforms and applications when and where teams need it; management and control of all relevant data in a secure and collaborative system; and powerful leverage to quickly reveal critical insights.

Our solutions seamlessly integrate with existing infrastructures that allow organizations to make command decisions more efficiently to better protect their communities.

To learn more, visit: www.cellebrite.com