The Contactless Future

Implementing a Safe Environment in Schools, Workplaces, Institutions and Public Spaces

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The global coronavirus pandemic has devastated countless lives and resulted in far-ranging economic and social consequences. Over the past few weeks, we've witnessed a frightening trajectory of positive coronavirus cases and deaths in the world, rendering containment efforts futile in our hyper-connected and high-movement world. The rampant nature of the virus in social gathering areas has led to them emerging as virus hotspots and cluster epicenters. This has pushed many countries to closing schools, workplaces, institutions, dormitories and other communal spaces to stem virus transmissions.

Transforming Physical Campuses

One thing's for sure – Closing public environments cannot last forever. The reliance on physical academic institutions, tough navigation of work-from-home arrangements, and consumer preference for in-store shopping experiences reinstate the lack of global preparedness in going fully-digital. After all, we can only be fully dependent on zoom calls, live-stream lectures and food delivery for so long.

There is a strong need for educational, industrial and commercial environments to implement hygiene-conscious design changes as we move forward, post-pandemic. So, what can we see improved in the *environments of tomorrow*? What concrete enhancements can be made to better protect the students, employees and customers?

"We have to work within the confounds of the process that is set up and set up realistic protocols, but in my experience most processes and systems can increase efficacy with streamlining, adding technology and reorganizing how things are done," says says Heidi Wilcox, of Wilcox EVS Solutions.

Technology can reshape and elevate our environments. Moving forward, one simple option is to *Go Contactless*.

Contactless as the 'New Normal'

Though much about the virus remains unclear, what we know is that it transmits predominantly through human contact. Studies have shown that the coronavirus is spread through respiratory droplets, meaning that when an infected person coughs or sneezes, other parties are affected when these droplets are inhaled into their respiratory system. These virus droplets can remain active on surfaces from a few hours up to several days. This means that touching contagious surfaces will pose a potential transmission threat if your hand touches your nose, mouth or eyes afterwards.

With increased prevalence of such knowledge, a touch-averse way of life is taking precedent. Many individuals are inculcating a hygiene-conscious attitude, minimizing contact with public surfaces and sanitizing their hands aggressively. With contactless, transactions are made with a simple "tap-and-go", or more accurately, *"hover-and-go",* eradicating the need for individuals to touch any surface as

all. This automatically lowers one's risk of coming into physical contact with the virus, granting a smoother, safer process for any task.

From contactless payment to automatic sensors, let's run through the feasibility of implementing contactless solutions within different physical campuses and environments.

Motion Sensors

I'm sure we all know that every campus is filled with multiple "touch points". Lift buttons, light switches, push taps, toilet flushes, water coolers, refrigerator handles, door handles, the list goes on. These surfaces, also known as "high-touch" surfaces or even "disaster areas", are often covered with deadly pathogens and frequently touched by members of the campus to carry out basic yet essential tasks, like using the washroom, opening the door, or turning on the lights.

If not yet in place, setting up motion sensors can create a seamless contactless execution for required actions. Motion sensors pick up on physical movement in a given area and transform that information into an electric signal, which is then wired to complete a task, like opening a door, turning on a tap for a pre-specified duration, or enabling a button. With such mechanisms in place, individuals can now go to the bathroom and wash their hands without fear of getting them dirty again when reusing the same lever to switch the tap off, minimizing cross-contamination between different users when operating tap faucets. Not only is this solution "touch-free", the automatic nature of sensors can also elevate the standards of convenience for users, save space and reduce electricity expenditure.

Contactless Payment

With coronavirus shifting the paradigm of social settings; one thing remains constant in our day-to-day lives - payment. Cash has been recently branded 'filthy lucre' and eschewed for fear of coronavirus spread, and chip-and-pin payment methods prove to be no safer. Alongside China's mandatory cash disinfecting measures and South Korea's cash 'quarantine', the World Health Organisation has also advised hand washing after handling bank notes.

Global endorsement for contactless payment methods has been rife. Contactless payment systems use radio-frequency identification (RFID) or near-field communication (NFC) to make secure payments when in close proximity with a terminal. Around the world, countries like Spain, Germany, UK, Greece, Turkey and Australia have increased their contactless payment transaction limits, and global payment provider Mastercard has warranted this change in countries where it has yet to be implemented, particularly in the Asia Pacific region. British supermarkets Waitrose & Partners and Lidl, as well as US supermarket Publix, are also amongst the few who have taken the initiative to encourage contactless payment. Apart from governments, organizations and businesses, end-consumers are also beginning to embrace digital wallets and contactless payment solutions.

With a surge in worldwide favor for contactless payments, it is pre-eminent that physical campuses and public environments install contactless-supporting technological infrastructure at points-of-sale. This includes canteens, vending machines, bookstores, printing shops, transportation systems and more.

Contactless Access Control

Now is the ideal time to re-evaluate your campuses' Access Control system or procedures and see if it warrants a change. And if your building does not have any in place, consider implementing a fully contactless one. Access control systems in campuses are typically accomplished by entrusting specified users with access cards or passwords, which they use to insert into card readers on doors and key into pin pads, creating restrictions on who may enter a facility. In some cases, biometrics are used to grant access control (i.e. use of fingerprints). However, as mentioned before, high-touch surfaces like pin pads, door handles, and fingerprint scanners have smooth, non-porous surfaces that can harbour the active virus, and other types of nasty bacteria, for up to several days, facilitating the spread of bacteria and germs amongst members of the campus.

Like contactless payments, contactless access control systems are a much safer bet. Such systems use radio-frequency identification (RFID) or near-field communication (NFC) to authenticate access when a user device is in short distance with an NFC sensor reader. Contactless access control systems foster a safer, more hygienic facility-entry process, allowing individuals worry less about disinfecting their access devices or sanitizing their hands before and after entering a room. Members can simply hover their NFC device over the reader located on the door to get in.

Contactless Personal Identification

Identity verification is integral in educational and corporate campuses. However, in office buildings, the once celebrated biometric time clock is now being shunned as an epicenter for germs in the workplace. In New York, employees in organizations such as the New York Police Department and the Metropolitan Transit Authority protested the mandated use of biometric clock-in systems, and many companies have temporarily suspended the use of fingerprint scanners on their campuses in an effort to reassure their employees and mitigate the virus transmission.

In place of biometric systems, contactless digital identification formats can be implemented to de-necessitate the need of 'touching' when it comes to authenticating one's personal identity. NFC identification devices and facial recognition technology are suitable alternatives, offering individuals and organizations a contact-free ease of mind.

The Way Forward with Wearables

When it comes to designing a contactless environment, there are a few implementation options that one can consider. Let's take a closer look.

Card/Fob Approach

Cards (payment cards, access cards, identity cards) are no-doubt the most common devices for on-campus contactless implementation. In schools, student ID cards are issued during matriculation and often used by students to enjoy exclusive student discounts, reserve facilities (i.e. gymnasiums), and to confirm their identity for key events and examinations. However, this posits a new problem: the multi-card or multi-fob problem, where members of the campus are entrusted multiple cards with different functionalities, and have to flip between them for different uses. Plastic cards are also often easily misplaced, with a staggering 3.8 million missing student cards reported in America every year, amounting to approximately USD$83.6 million spent on card replacement.

While issuing cards may be familiar low-cost option but may not be the most efficient or promising solution moving forward.

Smartphone-based Approach

Apart from cards, the ubiquity of smartphones have made them the 'modern' go-to option for contactless, especially when it comes to making payments. At Duke University, the University of Alabama and the University of Oklahoma, digital IDs have made contactless verification possible in school campuses. While this is a step in the right direction, promoting the increased reliance and usage of mobile phones may be a double-edged sword. Firstly, digital IDs in smartphones may be convenient for use under regular circumstances but may be rendered inept in situations like examinations, where the use of digital devices are typically forbidden. Schools may also find it hard to grant to impose this format of verification, considering students do not unanimously own an NFC-enabled smartphone. More importantly, taking hygiene into consideration, humans' inseparable nature with their smartphones results in these devices being carried into different bacteria and potentially virus-clad environments like toilets, handrails, countertops and many other public surfaces. Our mobile phones are clad with bacteria and germs that they pick up when we bring them about throughout the day, and hence may defeat the original purpose of a germ-free 'contactless' campus in the first place. Just to put things into perspective, a 2011 study done by the London School of Hygiene & Tropical Medicine found that 1 out of every 6 smartphones they studied contained traces of fecal matter. Yuck.

As smartphones start to take over the world, it is essential to consider the suitability of a smartphone-based approach in your campus (and of course, the hygiene factors).

Wearables Approach

Yes - We're talking about NFC-enabled payment wearables. While this may be a novel concept to many, wearables are starting to become the next big thing, with Mastercard reporting an eightfold increase in wearable payment transactions in 2019, and wearables reportedly gaining traction in the education sector. Wearables exist in both active and passive devices, which means they can come in the form of a shiny digital watch or even discreetly camouflaged as your everyday accessories (i.e. rings, necklaces, wristbands). And just like plastic cards, wearables are equipped with secure elements that make payment transactions or identity verification features safe and secure.

The good thing about wearables is its ability to offer integrated functionalities within a single device, eliminating any multi-device issue. The 'wearable' aspect means it is attached to the body (for example, worn day-to-night as a rubber wristband), allowing it to be more of an enhancement rather than an addition. Individuals will never have to worry about remembering to pick them up when moving around the campus. From a hygiene perspective, this means they will rarely be left exposed to contaminated surfaces, reducing the likelihood of bacteria and germ transmission.

"Wearables are ideal in an environment like this where we want to enhance workplaces without causing any disruption or added inconvenience. The winning factor is you wear it on you at all times. You don't need to go fondling through your wallet or your pocket and then start worrying about the germs in your wallet and pocket," says Terrie Smith, Chief Executive Officer of DIGISEQ.

When it comes to physical campuses, one idea is to issue *branded wearables* to members. Passive wearables may just be the cheaper (and more suitable) option here, as they are less distracting, more subtle and cost less than active wearables. Custom-branded wearables are not only a sweet take-home souvenir but also transforms members into mini walking-ambassadors, reinforcing organizational identity for an institution or a business.

Wearables offer the unique opportunity to integrate cutting-edge technology into environments and elevate the campus experience, making it an undefeated solution when putting forward a contactless environment.

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NFC Ready Wearables

DIGISEQ provides an end-to-end service that securely delivers data into everyday wearables, enabling almost anything - from rings to bracelets - to have NFC payment, access control, digital identity and user engagement functionality. In essence, we help businesses elevate convenience standards for their consumers.

We offer businesses an all-in-one solution for entering the wearable technology market. We connect an entire ecosystem, serving as a central point of contact between banks, product creators, retailers, chip manufacturers and leading technology service providers.

Our award-winning digital platform empowers businesses by allowing them to tap on our existing infrastructure, ecosystem of partners, hardware and security systems to create wearable technology without disrupting their existing business processes.

As the pioneers and market leaders of passive wearable payment technology, we aim to be the world's largest issuing network.

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Fay is a payments enthusiast based in Singapore with a broad perspective of the contactless trends worldwide. In her most recent role with DIGISEQ, she has focused on the uptake of NFC ready wearables amongst consumers.

If you have any comments or questions regarding this paper, or require additional information or images, please contact the author at info@digiseq.co.uk