

IBT and the Post-Coronavirus Campus: 10 Strategies to Consider While We Wait It Out

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In the post-coronavirus era, what will people need to have the confidence to be on campus with other people again, and what can we do to make buildings cooperate—intelligently—with humans in new ways to maintain our health?

Technologists may have some answers for this conundrum, using many of the intelligent building technology (IBT) ideas that have been developed over the last decade. While the initial IBT focus was building efficiency and maintenance, recent efforts have expanded to include humanistic purposes that leverage occupancy data to support physiological and psychological goals. This shift may help us think about the post-coronavirus campus.

So, while we wait out the virus, what can we do now? Some of the following ideas are practical and some ambitious, but each combines a technology and a human element with an aspirational goal to improve and safeguard our lives.

1. *Ensure your foundational communication systems are solid.*

If real-time data of potential risks will be communicated by building-wide emergency messages, campuses should consider updating announcement systems to comply with standard NFPA 72: *National Fire Alarm and Signaling Code*. New connectivity between IBT systems and announcement systems could help expedite getting the message to occupants.

Distributed antenna systems may need an upgrade to fully support coverage for first responder communications as well as various wireless carriers. And Wi-Fi, the life-support system for modern society, must be robust and resilient.

2. *Then, start your IBT strategy with beacons and sensors.*

Devices to track occupants have a variety of uses. Alerts may be sent to smartphones using vibration to warn when proximity is too close, or when an appropriate setpoint, such as a gathering of more than 10 people, is identified. Furthermore, if someone is identified for coronavirus or other diseases, immediate alerts may be sent to anyone who has been in proximity to the infected person so that they may seek testing. Of course, extensions of this idea may cause concerns over privacy and cybersecurity that will need to be addressed.

3. *Use smartphones and other personal devices to minimize human interaction and identify potential issues.*

Personal devices such as smart watches and fitness bands are monitoring body temperature. Kinsa uses crowdsourced body-temperature tracking to detect potential concentrations of infected people. A Carnegie-Mellon University project uses voice recognition to identify voice signatures that are characteristic of people with COVID-19. This approach is based on crowdsourced input that could become more accurate over time. Occupant voices within buildings could be monitored for such signatures by deploying microphones throughout the building, as is done with gunshot detection systems, or via dedicated test stations.

Simple smartphone app ideas include ordering from “grab and go” cafes with trusted virus protection schema and dedicated rideshare pickup/drop-off locations with infection testing stations. (This also leads the transition to deploying more autonomous vehicles.)

4. *But, avoid an overreliance on smartphone apps and personal devices.*

Not all building occupants will choose to par-

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– Marshall McLuhan

ticipate with your new apps. Guests, technology curmudgeons, and the contrarians (you don't have any of those on your campus, do you?) will also need to be supported. Consider touch-free kiosks and digital signage displays as supplements that could satisfy some of the communications needs for people not participating in the "app program."

5. *Explore new networked versions of existing devices, such as thermostats, fire extinguisher charge indicators, water-purifier filter status reminders, etc.* New devices could include hand sanitizer and antibiotic soap dispensers with fluid-level alerts, breathing masks and other personal protective equipment (PPE) dispensers, localized air purifiers, virus test stations, and others. Start with a small proof-of-concept project, and if successful, move quickly to implement these devices across campus.

6. *Evaluate your mix of learning spaces.*

Even if this pandemic is the last one in our lifetimes, the importance of incorporating effective online learning programs should satisfy even the staunchest skeptic. All campuses will benefit from a thoughtfully balanced mix of classrooms that includes group learning spaces and audio/video production studios that support online teaching and the production of online instructional materials.

7. *Implement voice-activated strategies to replace touchpoints for common interfaces.*

Voice-activated, touch-free devices should be considered wherever possible. This could include doorknobs and strikes, elevator buttons, intercoms, and many other common interfaces. Many people may choose to be alone in elevators and may wish to have indicators that elevator cabs are empty.

8. *Upgrade restrooms to minimize infection possibilities.* Restrooms will require specific attention, as precautions will be needed ensure occupant confidence. Build apps and digital signage with data indicating when restrooms were last cleaned, which stalls are available, occupancy, etc. And, prepare for a future of individual restrooms on campus.

9. *Upgrade building entrances to incorporate wellness testing stations.*


Entrances will be particularly important as the gateways for infection and may be equipped with disease detection systems. These may be automated with temperature, blood-sampling, or other appropriate technologies, or with new types of personnel stations staffed by trained testers.

10. *Design occupant commissioning (OCx) plans to inform and educate building occupants.*

Of course, our building occupants will need some training and encouragement/enforcement for the mitigations to work properly. Occupant commissioning (OCx) plans should be created to ensure that all permanent and temporary occupants become willing partners in ensuring healthy practices for themselves and others. As many campuses learned through years of experience with the Leadership in Energy and Environmental Design (LEED) program, a lack of occupant "buy-in" can lead to abandonment or "gaming" of the system, resulting in reduced advantages of the investment.

WHERE TO START?

We believe that campuses will benefit by including infrastructure (at least) for intelligent building technologies for any building currently in design. A successful approach to planning begins with a new team member, the IBT PM (intelligent building technology project manager), following applicable standards such as ANSI-TIA 4994 ("Standard for Sustainable Information Communications Technology") and ANSI/BICSI 007-2017 ("Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises"). An IBT PM following these standards can deliver design packages that reside in Construction Specifications Institute (CSI) Division 25: *Integrated Automation*.

We can learn from Marshall McLuhan's observation, "Our Age of Anxiety is, in great part, the result of trying to do today's job with yesterday's tools and yesterday's concepts." Proactively planning for returning to our campuses while we wait for the coronavirus lockdown to end will make our transition to the post-coronavirus era smoother, less anxious, and more successful. 

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