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A COVID-19 Virtual Ideation Experience

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INTRODUCTION

All eyes will be on us.
The physical workplace was one of the first sacrifices made in the global war on COVID-19, and it will be under unprecedented scrutiny as we navigate our return to work. The decisions CRE professionals, corporations, and developers make in the next 1-2 years will stand among the most important of their careers.

A silver lining of this crisis is the opportunity to better understand our true nature and to learn important lessons for the future…if we are paying attention. Covid-19 has revealed our weaknesses and poor preparation as well as our capacity to help each other adapt and overcome. What will it teach us about all the systems it has disrupted? Will we learn the things we need to for the next round?

Aiming these questions at the workplace can reveal relationships among factors like space planning, worker behavior, and emerging technology, and help identify the changes in our processes and behaviors needed to help prevent history repeating itself.

How will we respond, and how will that response ripple through those connected systems?

Extending those questions even further, we see a corollary between our responses to the current pandemic and the longer-term issues and threats of climate change. This paper suggests several changes that will be necessary, and the shorter- and longer-term impacts they may have on workplaces and the environment.

RESPONSE 1: WORKSPACE RECONFIGURATION

"Known unknowns" – such as how long distancing strategies will remain and the degree of adoption by employers and building owners – limit predictions about the environmental impact of worksite reconfigurations in response to COVID-19. We expect a few macro effects to emerge, including significant reductions in real-estate footprints and increased influence of HR leaders in CRE decision making. Based on the information known to date, we also anticipate the following environmental benefits and penalties from changes to the workplace.

Near-Term Response (Risk Mitigation)
- Increased use of space monitoring and controls
- Social distancing requiring occupancy limits in most offices
- Temporary halt on unassigned/hoteling
- Extensive safety measures: masks, temp scanners, and cleaning stations

Potential Environmental Benefits
- Staggered work shifts or A/B teams required by occupancy limits will reduce daily vehicle emissions of company operations
- Increase of virtual work may reduce office waste. The current paperless environment has the potential to permanently change people's reliance on printed documents.
- Preference for naturally ventilated buildings and workspaces could reduce HVAC loads.
- Accommodating social-distancing protocols may encourage corporations to re-examine the best possible use for each office space and increase awareness of its value.
- Innovative alternative leasing or operations models could increase efficiency in real estate, leveraging existing buildings before committing to new construction.

Potential Environmental Penalties
- Engineering associations are recommending adjustments to HVAC system operations such as increased ventilation flow rates, increased outside air, decreased use of return air heat recovery and longer system run times that may increase facilities' energy use.

- Until perceived health risks from taking public transit are overcome, employees may increase travel via SOV.
- Increased use of anti-microbial materials in the workplace may pose health and environmental risks.

RESPONSE 2: INVESTMENTS IN BUILDING AUTOMATION

The role of the physical building in providing safe and flexible work environments will become vital to the performance of organizations. The ability to integrate sensing data, visualize operations and use, and control buildings through automation will become the "new normal." Risk analysis and infection response planning will preoccupy management, along with the search for and testing of affective technologies. Leadership will seek to accelerate automation projects while leapfrog technology, such as use of G5 networks, will combine with personal phone contact apps to automate use of space at the individual user level.

Occupancy Monitoring and Control
Occupancy monitoring with network data management of sensing information is already widely available. When integrated with lighting fixtures and local HVAC zone controls, occupancy sensing can provide a detailed view into how a building is used. Smart lighting fixtures, with zone sensing can automatically dim lighting, harvest daylight, and adjust light levels based on changing tasks. Occupancy sensing technology can provide location data to inform use of space, and need for cleaning.

HVAC Upgrades and Air Quality
Ventilation is the first line of defense against airborne illnesses. Studies performed by the Harvard Healthy Buildings have shown that bringing in more outdoor air dilutes air contamination. Recertification of existing outside air delivery systems and installation of small particulate filters will be the first line of defense. The use of indoor air quality sensors will be used to provide real-time measurement of particulate matter and humidity in tenant and common areas.

Indoor Air Quality (IAQ) data, connected to analytics software will automate air changes. This will not only diminish unnecessary inspection tasks, it will allow buildings to automatically adjust the quality and quantity of air, saving energy while protecting occupants. Air purification can be further enhanced with UV light air purification.

Touchless Control
Touchpoints for the manual operation of water fixtures, light switches, thermostats, appliances, printers, etc., will be re-evaluated as possible transmission point for viruses. Water fixtures in bathrooms will be replaced with touchless fixtures which, depending on age of existing devices, will result in a reduction of hot water usage. However other devices, such as light switches and thermostats, will be locked in safe on/operate position as a near term response. The net impact will be an increase in energy usage.

To combat that increase, automation of lighting through retrofit with occupancy controlled dimmable ballasts, installation of zone occupancy sensors for the control of

lighting and HVAC equipment, will be investigated and installed. Smart plug load controls that automatically detect the usage of equipment can enhance the diagnostic evaluation of equipment, providing further energy savings and operating costs savings.

Overall, the automation of buildings to solve for touchless control will result in a long-term decrease in energy. The use of mobile phone apps, which broadcast location and user setting preferences, may open the door to new tenant services and further energy use automation. This automation will also allow for more transparency in energy usage and the opportunity to improve disclosure reporting on GHG emissions.

RESPONSE 3: INCREASE IN REMOTE WORK

Recent CoreNet research found that 69% of CRE professionals expected their company to take less real estate due to increases in remote working.[1] A concurrent Gartner survey[2] of CFOs revealed they plan to shift at least 5% of previously onsite staff to permanent remote status. This significant shift from conventional work paradigms will impact greenhouse gas emissions in four major categories:

Commuting
Remote working will reduce overall commutes and related emissions. Before COVID-19, over 76% of American drove alone to work every day, while another 9% carpooled[3], creating a significant portion of the 20% of U.S. CO_2 emissions from cars and trucks. Moving 5% of workers to remote would take roughly 6.3 million cars off the road, reducing related emissions proportionally.

Electrical Consumption
The effect of the pandemic on overall energy use is complicated to predict. The Energy Information Administration indicates current energy use by sector as being 32% industrial, 29% transportation, 18% commercial, and 20% residential.[4] The first three sectors have reduced energy use significantly, but residential will increase as consumers spend more of their time at home, increasing use of air conditioning, lighting and appliance use.

Business Travel
Remote working capacity and productivity via video conferencing will replace some business travel, reducing emissions from planes, cars, and other forms of transportation. While impacts on hotels are more complicated to estimate, they will almost certainly reduce both emissions and generation of waste.

Office Space
Smaller offices will use less energy in operations. Over time they will also lead to reductions in embedded carbon from equipment, furniture and construction. However, in the short term it is important to note that office space doesn't just disappear. Excess real estate of perhaps significant proportions means positive environmental impact will not be immediately realized.

CONCLUSION

There is no denying that "business as usual" will take on a new meaning for the CRE community. But this crisis offers us a collective moment in time to reflect on what is most essential in order to conduct business with both fiscal and global responsibility. As we evaluate the many options in front of us, we must remember to see the connections inherent in the systems we are part of. Fixing one need to the detriment of several others will not rebalance the whole. Short term focus can have significant repercussions in the long term if we do not keep both in mind.

Making choices aimed at balancing the bigger equation will help ensure that we can strengthen the weaknesses that have been revealed and ensure a better, safer, stronger, and more responsible future.

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