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A COVID-19 Virtual Ideation Experience

Team Topic and Number: **WORKPLACE WELLBEING – Team 01**

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INTRODUCTION:

As of now, researchers know that the new coronavirus is spread through droplets released into the air when an infected person coughs or sneezes. The droplets generally do not travel more than a few feet, and they fall to the ground (or onto surfaces) in a few seconds — hence social and physical distancing is effective in preventing the spread.

So, what does it mean to the workplace-built environment?

The key words from the understanding of the above definition are "Touch", "Social distancing", "Immunity" and" Air".

The various standards set thresholds to define the applicability in protocols related to Cleaning, Designing, Strategizing, Future forecasting, Business re-alignment, Governance and Socializing.

A workplace-built environment is made to integrate work-life and thereby be cleaned, governed and socialized. *In this research white paper*, we shall look at all these aspects and attempt to define the applications from a "Now", "Soon" and "Later" tagged recommendations.

There have been some guiding principles to our research – Workplace, Workforce & Work rules. These principles have been the steering factors behind each of our sections within the matrix.

WORKPLACE	Buildings shape our routines and habits. How can buildings make improving wellbeing easier for occupants to be healthier every day? What elements would be prioritized to promote wellbeing: Exercise, Recovery, Nutrition, Social connections, Financial wellbeing etc., and what would be the design factors guiding these…
WORKFORCE	People are a company's largest asset. Health and wellbeing are different. We think it worth considering the difference between the two: Health is really about the management of chronic disease (helping people be less sick) and wellbeing is a process of creating purposeful and fulfilling work (helping people to thrive) to a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".
WORK RULES	As our work continue to move away from manual labour, the building need to be designed for 'Constant movement' to ensure they get a regular movement throughout the day. Whether these rules are Design guidelines or Cleaning protocols, we need to revise these rules to focus on the wellbeing.

THE WORKPLACE WELLBEING MATRIX:

Workplace Specific Space	Workforce Centric strategy	Work Rules Recommendations		
		Now	**Soon**	**Later**
Building Entrance	**Rapid Entry/Exit screening system**	• Thermal scanning • Scanning for safety gear.	• Thermal camera installation	• AI based Temperature monitoring system
High-touch point	**Hand's free optimization**	• Increased cleaning regime • Doors are operated only by security guards • Hygiene stations outside all meeting rooms. • Open door policy if possible. • Dedicated Lift operator	• Sensor based doors • Alternatively, foot operated doors	• Future interface enabled by voice command or smart cards to open doors and operate lifts
Base build considerations	**Building enhancements**	• Regular sanitization of the AHU. • Conduct air quality assessments, testing, design and provide engineering guidance to improve ventilation effectiveness of existing HVAC systems.	• Media filter to be replaced with MERV 13/Class 7 (Recommended) or HEPA Filter/MERV 16.	• UVGI system for AHU cooling coil. • Select future properties which are compliant with WELL and LEED standards for Indoor air quality and ventilation parameters.
Indoor Environmental condition	**Indoor Air Quality** CO_2/VOC/$PM_{2.5}$ & PM_{10}/Ozone	• Indoor Air Quality testing & remedial measures.	• Indoor air quality monitoring & measuring system	• AI sensor based Intelligent BMS

Workplace Specific Space	Workforce Centric strategy	Work Rules Recommendations		
		Now	**Soon**	**Later**
Spatial ratios	**Occupancy optimization**	• Checkerboard – Alternate seating for main workplace • Customizing occupancy patterns based on workflow. • Meeting room seats to be reduced to 50% (Preferred to be on Virtual).	• Sensor based AI systems to control physical distancing. • Regulated movement in shared spaces.	• Flexibility with WFH for few days a week to control occupancy. • AI based desk allocation; meeting room based on the workspace strategy.
Space Cleaning	**Protocols**	• Increased cleaning regime. • Touchpoints sanitization schedules • Self - Clean Desk policy may be imposed	• Self-cleaning coatings incorporate titanium dioxide (TiO_2) nanoparticles, which are photocatalytic. TiO_2 and nano-size TiO_2 pigments in coatings provide good resistance	• Desks integrated with UV light cleaners which can be sensor activated to be operated remotely, ensure no -one is stationed in the workplace.
Space Disinfecting	**Indoor and outdoor environment**	• Apart from space cleaning, disinfection of the workplace once in a day. • Training program in place for facilities management staff and/or other providers	• Usage of mechanized tools for disinfecting.	• Usage of Drone based disinfection application.
Handwashing	**Hand-washing infrastructure & Provision**	• Ensure partitioning of washbasin • Paper towels for hand drying or Automatic driers. • Include signage at the sink promoting proper handwashing techniques.	• Foot petal operated /Sensor based taps. • Sensor based soap dispensers.	• Hand dryers equipped with HEPA compliant filters.

Workplace Specific Space	Workforce Centric strategy	Work Rules Recommendations		
		Now	**Soon**	**Later**
Technology	**IoT, AI & Machine learning**	• Digital Checklist • Intelligent Building Management System	• IoT enabled Dashboards • Cloud based reporting	• Touchless interface from elevator to access control doors to coffee machines. • AI to test Indoor Air quality with real time data to control fresh air intake, filtration processes. • AI to set off cleaning and maintenance protocols • Health tracking system in wearables to track real time data and using Algorithm based predictions.
Mind spaces	**Mental health support**	• Employee engagement- Build awareness on Workplace wellbeing. • Implementation of biophilic design principles • Provide accurate information avoid speculation and refer to reputable sources. • Have clear response procedures in the event of any suspect on symptoms. • Provide relevant educational resources for the target population, such as basic prevention and control, as well as the importance of mental health, circadian rhythms and healthy sleep.	• Implement evidence-based restorative design strategies and building features in existing buildings. • Provide structured support for special work arrangements for the employees working from home.	• Develop mental health support plans according to social and cultural needs of the target population, such as Mental health support plans like Yoga, Meditation, Stress management plans, Mental health Emergency services. • Workstation Chairs can have provision for reclination- for a quick nap

Workplace Specific Space	Workforce Centric strategy	Work Rules Recommendations		
		Now	**Soon**	**Later**
Active spaces	**Stimulating physical wellbeing**	• Encouraging use of staircases, corridors, for walking. • Age and ability appropriate physical activity/exercise opportunities, led by a qualified professional • Change in workplace occupancy pattern - flexible worksites & work hours.	• End of trip (EoT) facilities in office spaces rewarding those who choose the healthy option of Cycling, Jogging or Walking inside, outside and in between the buildings.	• A dedicated physical activity space that is at least 370 M^2
Cafeteria / Food court	**Immunity boosting**	• Cooking at home & Bringing food from home in an airtight container is recommended to reduce contamination from sources at work. • Food should be heated thoroughly in microwave or other re heating device before eating • Disposable food mats, cutleries to be encouraged.	• Improving the engineering controls using the building ventilation system. • Increase ventilation rates & percentage of outdoor air that circulates rate. • Diet based food intake awareness session.	• App based food ordering. • International standard for Food safety- ISO 22001 to be implemented & followed.

COLLECTIVE THOUGHTS:

While we have provided a host of considerations to help plan for the wellbeing of workplace, each organization has unique needs that require a unique roadmap. The essence of this study is that the new workplace should be humane centric and be designed, managed and operated keeping in mind the workforce wellbeing.

CONCLUSIVE SUMMARY:

- **Immediate design interventions**
  - Handsfree system enhancement, Technology intervention for enhanced personal hygiene and workplace hygiene
  - Creating space division and classification for better wellbeing – Shared, Active and Mind Spaces
- **Transformation needed for the future**
  - Focus towards elevated wellbeing and creating workspace that have positive impact on users.
  - Automated data driven design to understand work patterns and requirements, continuous evaluation and updating workforce requirements for better service.
  - Mental health support systems
  - Flexible modular furniture for future eventualities
  - Biophilic design approach integral to all workspaces. Creating Zen zones, mindfulness rooms which have natural materials, background music of nature sounds allowing employees to break away from the clutter and rejuvenate. (Human beings are part of nature. Research has shown that one feels happy in the midst of nature)
  - Integrating air filtration system for better Indoor Air Quality in addition to the base building systems. Photo hydro ionizers and various other technologies to reduce PM levels, VOC, bacterial and fungal suspensions
  - Sensor based IAQ monitoring systems for CO_2, PM levels that automatically trigger fresh air inflow or filtration process
  - Human centric lighting systems designed to follow natural circadian rhythms that enhance productivity, reduce stress and fatigue.

Citations:

- *John Hopkins Medical sciences*
- *WELL building standards*
- *ISHRAE, ASHRAE*
- *Individual expertise*
- *BIFMA standards The Business and Institutional Furniture Manufacturers Association*
- *Research Paper Nanotechnology: The Future of Coatings—Part 1 - Kenneth B. tator, KTA-Tator, Inc*
- *International Journal Environmental Research & Public Health.*

Abbreviations used:

- *IAQ- Indoor Air Quality*
- *VOC- Volatile Organic Compounds*
- *PM- Particulate Matter*
- *IoT- Internet of Things*
- *AI- Artificial Intelligence*
- *CO2- Carbon dioxide*
- *HEPA - High Efficiency Particulate Air*
- *UVGI- (Ultraviolet Germicidal Irradiation)*
- *AHU- Air Handling Units*