THE NEW OFFICE BUILDING RETURNING TO THE FUTURE

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EXECUTIVE SUMMARY

> The needs, demands, and expectations of building occupants have changed. It's a process that began before the pandemic, and now it has accelerated dramatically, shaping how building users will work, and how the return to the office is managed in the next era.

Facility managers, developers and building owners have traditionally been the focus in terms of the importance of building outcomes, but occupants – workers, visitors and customers – and their experience in the space are key to the future of optimizing the investment in buildings. Facility managers have always looked to run an office building efficiently while minimizing operational costs. For developers and building owners, the focus has always been return on investment. Where does that leave the occupants and their needs?

Staffing an office building accounts for roughly 90% of the total cost of operation. So improving productivity, attracting and retaining talent, improving the occupant experience and increasing employee engagement seems obvious. But in reality the human element is often overlooked in the pursuit of more traditional metrics.

While there had been increasing demands for a home-like experience at work, the Covid 19 pandemic put the office work environment under a magnifying glass in terms of both the role the office will play in the future as well as the expectations occupants have for returning to work. When returning to the office, occupants will expect a safer, more secure, and well-coordinated experience. From parking to check-in, from getting through security to the comfort of their workspaces – they will want the office experience to be as seamless and easy as it was working from home.

Providing an engaging occupant experience will play a key role in transforming the office into a collaborative, interactive work environment. People will want to return to the office for the collaboration they can't replicate at home. Studies show that people are more creative when collaborating in person and that the process of bonding develops trust among participants. Trust then becomes an enabler of creativity. One of the conclusions of the research was *"There is no substitute for face-to-face interaction to build up this trust"* [1]

Not only will the office building of the future be highly dynamic and collaborative, it will serve as the cornerstone of a company's identity and culture, which you simply can't get from an online environment.

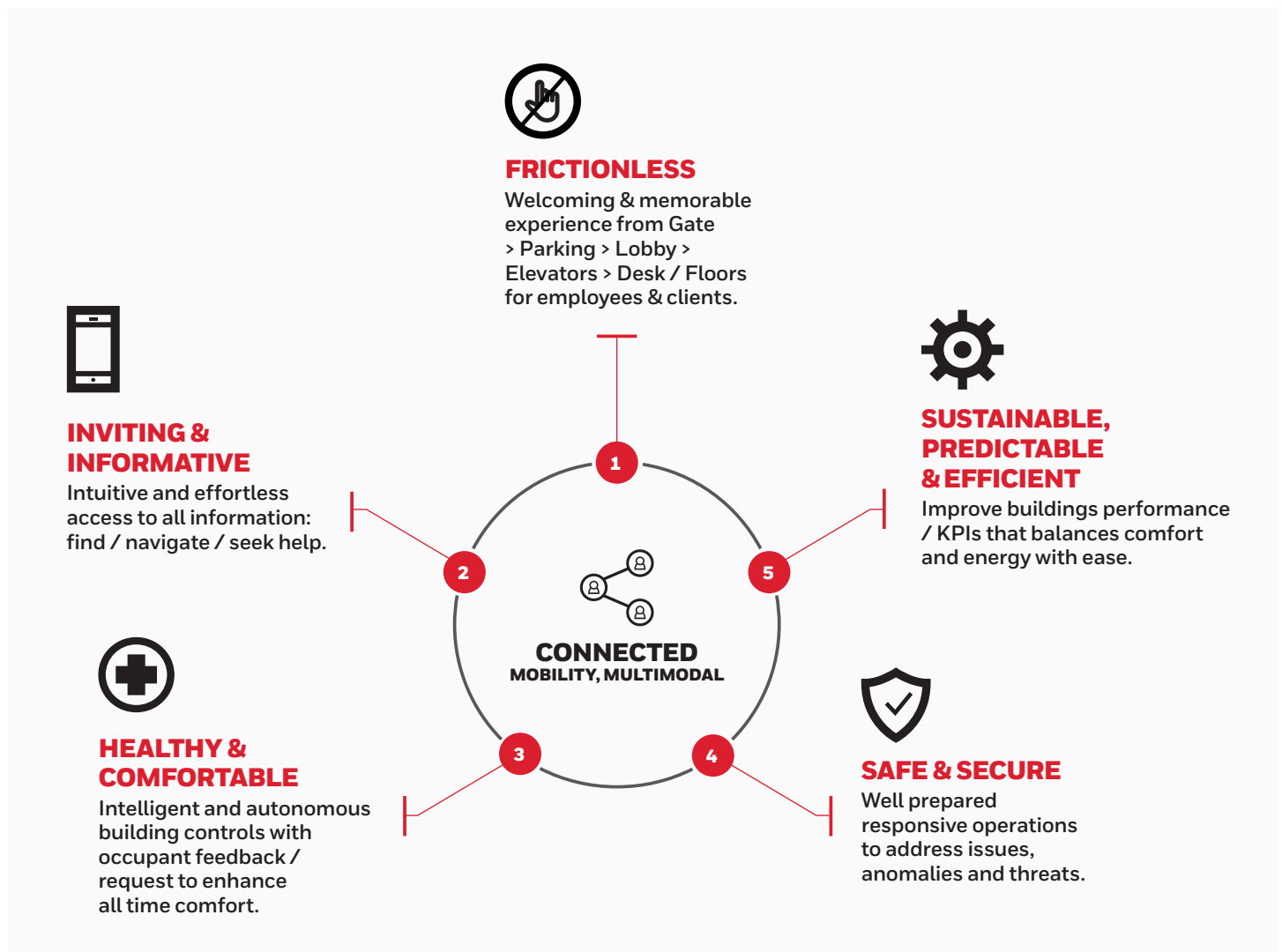> " **There is no substitute for face-to-face interaction to build up this trust.** "

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1 International journal of Organizational Design and Engineering 2012, MIT, Northeastern University, University of Cologne, University of Bamberg, and Aalto University.

THE HONEYWELL ADVANTAGE

A great occupant experience means providing the reassurance that everything is being done to keep building users healthy, safe, and secure. In a post-pandemic world, the healthy work environment is non-negotiable. Beyond feeling reassured, occupants will also want to know that their work environment is helping protect them and their loved ones.

Honeywell's experience across 10 Million commercial buildings has provided a unique view into the problems building owners, managers and users needsolved. That's why we've developed five outcomes which will enable occupants, facility managers, developers and building owners to be more successful in their day to day activities, creating a collaborative work environment that

can help increase productivity and efficiency. These solutions, through interconnected ecosystems, will provide actionable insights as the role of the office evolves, and will not only provide for changing needs, but can completely transform the experience of occupants in the building. The vision is focused on five outcomes:

FRICTIONLESS
Welcoming & memorable experience from Gate > Parking > Lobby > Elevators > Desk / Floors for employees & clients.

INVITING & INFORMATIVE
Intuitive and effortless access to all information: find / navigate / seek help.

SUSTAINABLE, PREDICTABLE & EFFICIENT
Improve buildings performance / KPIs that balances comfort and energy with ease.

CONNECTED
MOBILITY, MULTIMODAL

HEALTHY & COMFORTABLE
Intelligent and autonomous building controls with occupant feedback / request to enhance all time comfort.

SAFE & SECURE
Well prepared responsive operations to address issues, anomalies and threats.

FRICTIONLESS

Imagine a journey through the office without stops. Without touchpoints that take time and effort, reduce comfort and increase health risks from surface contact. A frictionless office removes unnecessary physical barriers and wait times while helping improve occupant safety and security.

For occupants, frictionless starts before deciding to go to the office where they can reserve a desk for the day through their occupant app, and where they can coordinate collaboration points with co-workers and plan to work from the office on specific days.

The frictionless experience continues when employees drive into the parking lot, the gates automatically open, and they're directed to an optimized open parking space. An occupant app then directs them to the closest entryway to the elevator which will be waiting to take them to the building lobby.

Frictionless means no need for badges. Facial recognition identifies building users and grants access instantly while in the background, checking facial temperature and mask adherence for

safety. As access is granted, the number of the elevator to take the occupant to their assigned floor – or next meeting – is displayed on the same screen that was just authenticating their access.

The entire process is uninterrupted, clean, and minimizes contact with surfaces.

But frictionless access doesn't mean compromised security. Biometrics and Multi-Factor Authentication enhance security while providing a seamless experience.

The frictionless experience is not meant just for tenants. Visitors, customers and vendors are equally important. It could be an important client coming for a presentation, or someone coming to discuss a possible partnership. The visitor could be a prospective employee coming for an interview and getting a first impression of the company. Frictionless means that visitors will get a link send to their smart phones as soon as they are booked to arrive to the office. The link will open a personal invitation in the building occupant app that will allow them to input vehicle information.

On arrival, visitors receive automated parking direction. The facial recognition system will identify them through a smartphone-linked badge. An elevator will take them directly to the visitor center – all without friction or unnecessary physical barriers or interactions.

Instant connectivity and interoperability of key building systems – parking and billing, HR, secure access and badging, turnstiles, facial recognition, elevators – all work seamlessly and instantaneously in the background to enable a smooth, confident journey. And it's all powered by Honeywell systems and partners.

INVITING AND
INFORMATIVE

The seamless occupant experience also depends on quick and easy access to two-way information for employees and visitors alike.

Employees manage most of their day-to-day life with a smartphone. They're accustomed to immediate access to information to accomplish their goals. Banking, navigation, public transportation, emails, meetings, news, telemedicine – all are done through a smartphone. Connecting the building occupant's daily interaction and experience through an occupant app is a natural next step to meet evolving expectations and needs.

An occupant app allows building users to book a meeting room or workspace and to plan their day. If the meeting room is too cold, the occupant app will know your location to inform building management. An automated system will handle your request and adjust the temperature accordingly.

The meeting continues, and productivity remains high while the occupants feel a familiar home-like experience. Any other building maintenance request or feedback will be gathered through the app, automatically processed, brought to building management attention, and the result is communicated back to the requesting tenant.

Indoor navigation through app-based wayfinding helps occupants and visitors alike minimize idle time and increase productivity. Paying for parking, ordering food, signing for a package – all can be optimized through the occupant app as a single source communication tool.

Digital signage throughout the building with relevant information will allow for better wayfinding, health and safety messaging, and live data such as weather, traffic, closed/open spaces and more, that visitors and occupants alike will benefit from.

Connecting a user-centric occupant app with key building systems, enabling automated 2-way communication with the breadth of critical building information, is facilitated by a host of interconnected key building and tenant systems, all enabled by Honeywell's platform.

Informative building will provide broad meaningful relevant and actionable data to the occupants – making the invisible – visible allowing all stakeholders able to consume and utilize key data in order to make right decisions

- Building occupants through digital signage and occupant app

- Building owners through analytics and KPIs

- Facility managers through building management dashboards, alerts, applications

HEALTHY AND
COMFORTABLE

Maintaining a healthy building is critical to operational continuity while following ASHRAE and WELL guidelines and helps to provide a reassuring experience to the occupant.

Health and comfort start with smart edge devices like sensors and actuators throughout the building. Honeywell's track record of leading-edge building control systems is now coupled with next generation artificial intelligence and machine learning (AI/ML) prediction models to drive air quality through high-tech filtration, disinfection technologies and dynamic ventilation. This helps with adherence to the latest guidelines while maximizing the comfort levels of occupants while maintaining energy efficiency in unused spaces. Studies by Joe Allen of Harvard University conclude that improved levels of air quality improve our cognitive function allowing employees to make better decisions throughout their day. [citation]
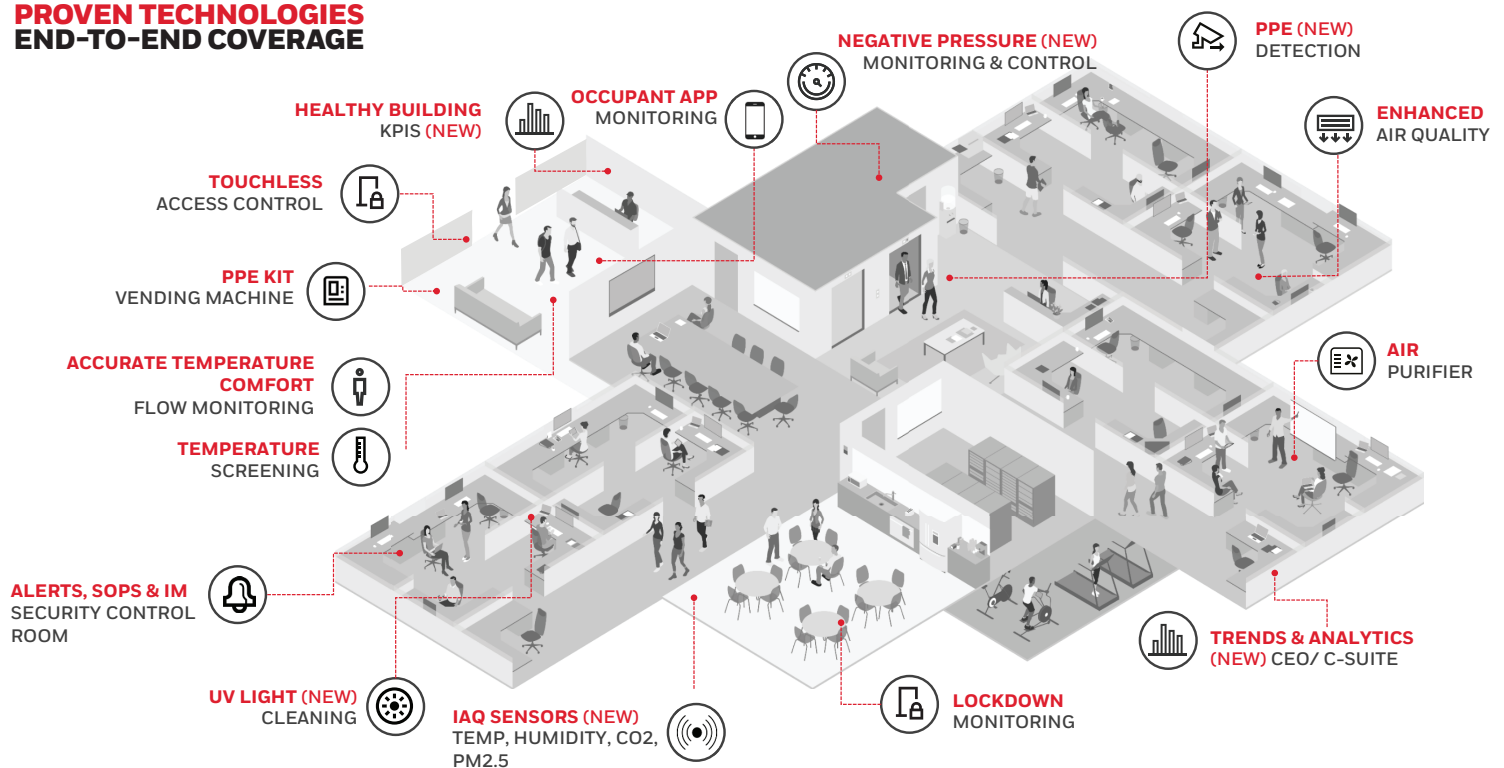

Machine learning models use security video to recognize adherence to social distancing protocols and mask adherence, allowing building and tenant leadership to focus adherence controls and education programs. People counting systems provide a live view of occupancy and live traffic patterns for every space in the building.

Digital signage and an occupant app provide occupants with transparent, up-to-date air quality and other key performance indicators for a healthy building.

PROVEN TECHNOLOGIES
END-TO-END COVERAGE

HEALTHY BUILDING KPIS (NEW)

OCCUPANT APP MONITORING

NEGATIVE PRESSURE (NEW) MONITORING & CONTROL

PPE (NEW) DETECTION

TOUCHLESS ACCESS CONTROL

ENHANCED AIR QUALITY

PPE KIT VENDING MACHINE

ACCURATE TEMPERATURE COMFORT FLOW MONITORING

AIR PURIFIER

TEMPERATURE SCREENING

ALERTS, SOPS & IM SECURITY CONTROL ROOM

TRENDS & ANALYTICS (NEW) CEO/ C-SUITE

UV LIGHT (NEW) CLEANING

IAQ SENSORS (NEW) TEMP, HUMIDITY, CO2, PM2.5

LOCKDOWN MONITORING

Safety and security are at the base of Maslow's hierarchy of needs, right after food, water and warmth. A building occupant who doesn't feel secure or safe will not be productive and will not want to be in an area or a building that doesn't provide the expected level of assurance.

Keeping a building safer and more secure starts with smart fire systems that can detect – and even isolate – fires before they escalate, and security solutions that are connected to building management systems. This interconnectivity allows for quick intruder detection as well as fast and seamless access of authorized parties.

Honeywell's security solutions provide robust, global integrated access control, video surveillance and intrusion detection to protect staff and property, optimize productivity and comply with strict industry regulations, all while reducing operational costs.

Combining video and access systems in a unified interface creates a unique set of features, such as camera alarms and playback recordings and allows operators to have better situational awareness and respond sooner to protect people and property.

Safety and security can only be truly delivered with end-to-end cybersecurity protection. Solutions that will not only keep building data secure, but comply with data privacy best practices and regulations such as GDPR. For example, algorithms can detect and mask people's faces from data feeds to comply with regulations, ensure privacy while delivering operational outcomes.

Cybersecurity is an integral fabric of our business, whether it's the products we develop, third-party integrations we enable, or a portfolio of software and services we offer to our clients.

This includes Encrypt Communications in Transit and at Rest, Device Identity and Common Trust Framework, Patch Management, Privacy by Design, Hardware Security, Default Most Secure and Robust Authentication and, Digitally Sign Code.

SUSTAINABLE, PREDICTABLE & EFFICIENT

Decarbonization, electrification, uptime optimization, intrusion protection or disaster prevention – all depend on an integrated sustainability roadmap that will guarantee a sustainable building, and a sustainable business, safeguarding reputation, resources, assets and occupants, data and the environment. While encompassing the environmental, social and governance (ESG) considerations of wellness, comfort, safety and security, sustainability is driven by the benefits associated from efficiency (energy savings for cost reduction), resiliency (business continuity for risk reduction), and accountability (reputation enhancement from emissions and accidents reduction). With many companies going beyond compliance and making commitments to net-zero or carbon neutrality with targets ranging from 2030 to 2050, and most stock exchanges requiring sophisticated disclosure reporting for listed companies, integrated sustainability solutions that maximize these outcomes through software, innovation, manged services and even flexible financing frameworks are integral to achieving these goals.

Predictive maintenance will alert facility management when issues are about to happen, before they become a problem. Remote controls will allow workers to manage critical building systems from wherever they are. Key systems alerts will display what the issue is, prioritize the most critical, and recommend the right fix and next steps. Augmented Reality-enabled wearables connected to remote services will allow offsite experts to triage incidents and provide assistance to onsite personnel with expertise they do not have to ensure effective and efficient containment. The result is a more cost-effective building operation.

With the commercial building sector responsible for 36% of global energy consumption, 40% of Scope 1 and 2 emissions, and 62% of consumed electricity (65% of that coming from lighting, heating/cooling and HVAC) the most effective pathway to achieving sustainability targets is through the real estate portfolio. A connected sustainability-focused building ecosystem with building management systems having advanced AI/ML models to turn data into insights for driving impact, coupled with facility improvement and innovation projects will drive conservation, containment, cost, continuity, and carbon improvements. For example, lighting digitization upgrades can provide cost and emissions savings but can also improve lumens that enhance workspace productivity and workforce positivity. From roadside to rooftop, legacy to LEED building, OpEx to OX, the right solutions partner will ensure your building is sustainable, inside and out.

CONCLUSION

What happens in your building is what matters most about your building.
An occupant experience that delights building users pays dividends throughout
your business model, from talent retention, to repeat business, to energy
optimization. Honeywell's vision, breadth of innovative products, and global
experience all come together to deliver true end-to-end open solutions.
The co-creation journey with our customers helps us identify desired
experience outcomes. This allows us to collaboratively define and execute
strategies to manage the life cycle of buildings for years to come, and through
challenges yet to be confronted. Honeywell stands ready to guide the journey.

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**THE
FUTURE
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WHAT
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MAKE IT**

—

Honeywell