



NAVIGATING THE COMPLEX SMART BUILDING LANDSCAPE

A COMPREHENSIVE USE CASE
GUIDE FOR CORPORATE REAL
ESTATE PROFESSIONALS



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Introduction

Driven by a new generation of workers, technological evolution, and a growing demand to lower operating costs; today's workspaces and business facilities are undergoing an unprecedented transformation.

Each individual change creates new challenges but this wave of change as a whole is creating a sea of new opportunities to achieve greater efficiency, reduce costs and enhance the environment of the building user.

Technology is enabling and facilitating major changes in workplaces and we are already seeing a myriad of facilities optimization and Internet of Things (IoT) solutions focused on the Smart and Agile Office sector and its occupants. The heightened focus on user-centric buildings has meant we are reaching a tipping point in the evolution of the workplace. Building owners and operators are becoming far more interested in increasing occupant well-being and productivity.

This is resulting in an increasingly complicated landscape of Smart Building solutions, which creates the perception of complexity. While in reality the tasks we need to use technology for are quite simple. However, there is not only a rapid development in terms of technologies, but more importantly, Corporate Real Estate and Facilities Management are shifting their focus away from technology towards individual use cases and their respective outcomes.

This has led to a degree of confusion over the diverse choices to be made in selecting appropriate solutions, with some building operators being lost in the smart building space. **This white paper is intended to help Corporate Real Estate and Facilities Management teams navigate their path towards more human-centric office buildings.**

Locatee and Memoori have jointly compiled this White Paper to help CRE professionals and Facilities Management teams address their priorities and navigate towards a strategy for "smartening" their building portfolios.

About Locatee

The Swiss company Locatee focuses on the development of the same-named Smart Building platform for workspace optimization. It enables large organizations to make fact-based real estate decisions, and shapes the way employees interact with an organization's office buildings.

The software solution analyzes data sources in real time by leveraging an organization's existing IT infrastructure. It provides detailed information on the workspace utilization in office buildings without the need to implement additional hardware. The solution provides scalable insights, regardless of the size of a real estate portfolio. It is easy to roll out and maintain, and complies with data privacy legislation.

Large national, multi-national, and global companies with office buildings on 6 continents have successfully implemented Locatee's solutions to optimize workspace utilization and create smart and occupant-oriented office buildings. Locatee supports companies like EY, Swiss Re, Swiss Post, UPC, Zurich Insurance and Biogen. Locatee has established a broad partner ecosystem and has joined forces with leading companies worldwide, such as Cisco, Regent, and Aremis who all share the vision to create connected and smart office buildings.

About Memoori

Stockholm based Memoori is a research and advisory firm focused on commercial Smart Buildings and the application of technology within the built environment. Founded in London in 2008, Memoori has a wealth of experience in delivering insights and data to clients across the globe.

Memoori has an extensive catalogue of published market research reports covering topics as diverse as Occupancy Analytics, Cybersecurity, Video Analytics, Lighting, Start Ups, Deal Tracking, Big Data and the Internet of Things. Over the preceding 10 years, Memoori has built a reputation for delivering insightful commentary on the important technology trends impacting the built environment and Commercial Real Estate industries.



What Makes a Building Smart?

While the definitions of a 'Smart Building' can vary across building types, industries and users, we believe that there are seven fundamental attributes or capabilities enabled by digitization, which can define a Smart Building.

Control

- Assets
- Compliance
- Elevators
- Utilities
- HVAC
- Lighting
- Facilities

Secure

- Access Control
- People
- Threat Detection
- Fire Protection
- Cybersecurity
- Incident Management
- Assets

Optimize

- Space
- Catering Services
- Cleaning Services
- Real Estate
- Portfolio

Conserve

- Water
- Energy
- Power
- Lighting
- Waste
- Sustainability

Find

- Workspaces
- Colleagues
- Meeting Rooms
- Parking Spaces
- Assets

Communicate

- Emergency Notification
- Wayfinding
- Facilities & CRE teams
- Employees

Personalize

- Comfort
- Occupant Engagement
- Health & Wellness
- Workplace Experience



The Seven Attributes of Smart Buildings

- Controlling Facilities and Operations
- Conserving Resources
- Finding People and Assets
- Optimizing Services and Space Utilization
Portfolio-Wide based on Data-Driven Buildings
- Personalizing Comfort and Workplace Experience
- Communicating with building Users and Staff
- Securing People and Assets

Table 1 Seven Attributes and Their Focus

ATTRIBUTES	FOCUS
Control	The focus of these two attributes is on energy management, resource utilization, asset management and the benchmarking of sites or regions with industry peers.
Conserve	
Find	The focus of these four attributes is on identifying sites with the greatest consolidation potential whilst at the same time satisfying the employees' needs for human-centric buildings, providing an improved user experience and indoor environment for building occupants.
Optimize	
Personalize	
Communicate	Securing assets and people is a fundamental attribute of Smart Buildings.
Secure	

Source: Memoori Research

Each of these attributes provides the basis for a set of use cases, which can deliver tangible benefits.

These attributes can also provide a framework for creating a smart building strategy, aligned to the overall business objectives of Commercial Real Estate owners and operators.

The beneficial outcomes of adopting a Smart Building approach can be defined in four overall characteristics: achieving higher operational efficiency, strategic benefits, connectivity and an improved indoor environment for building occupants.

We have identified 49 use cases which fall into one or more of the seven attributes mentioned. This illustrates the diverse set of applications which can be found in Smart Buildings.

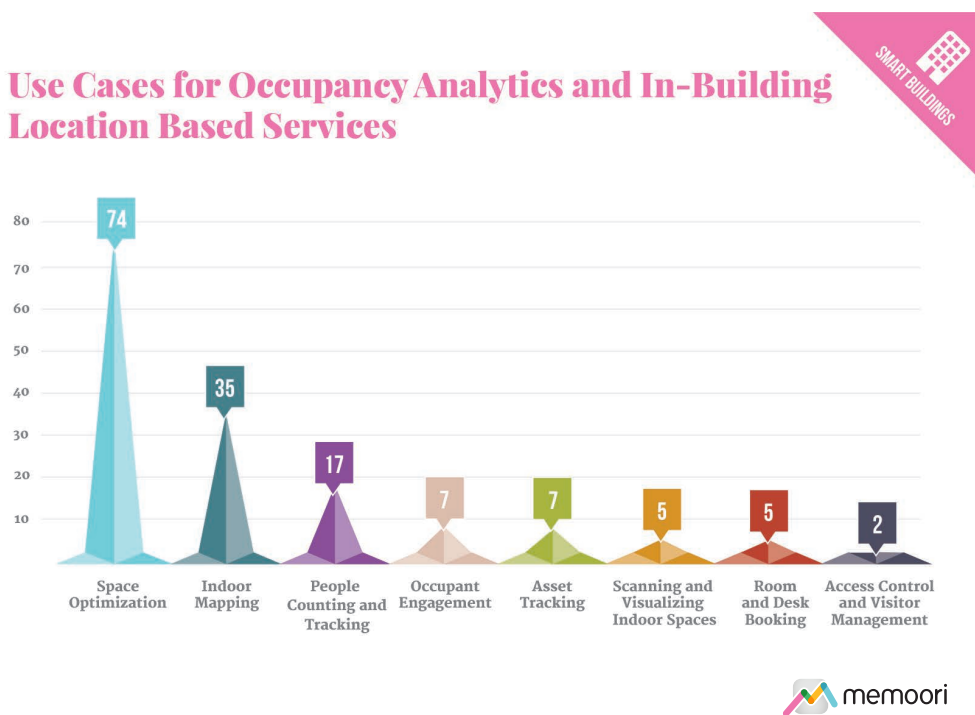
The fresh focus on user-centric buildings has meant we are reaching a tipping point in the evolution of the workplace. Building owners and operators are becoming far more interested in increasing occupant well-being and productivity, whereas, a short while ago, the main focus of technology in buildings was to optimize energy use.

This emphasis on the *Finding, Optimizing and Personalizing* attributes has resulted in a set of use cases mainly focused on employee satisfaction.

This trend is reflected in Memoori's 2018 report on **Occupancy Analytics & In-Building Location Based Services**¹ which found that space optimization was by far, the most widely quoted use case for solution providers, indicating the increased interest in office design and layout as a tool to improve occupant productivity and to maximize real estate utilization.

The diagram below shows the primary use case for each of the solutions offered by the 152 companies identified by the report.

Fig 1 Use Cases for Occupancy Analytics and In-Building Location Based Services



¹ <https://memoori.com/portfolio/occupancy-analytics-in-building-location-based-services-2017/>



Trends Shaping the Future of Smart Buildings

Some key trends contributing to the growth of Smart Buildings are the proliferation of IoT technology in Commercial Real Estate, the growth in new construction and changing flexible working patterns.

The IoT is starting to have a profound effect on Smart Buildings, as software solutions, advanced sensors and networking solutions enable a new range of data-driven services.

Across the globe, an unprecedented office building boom is underway with more than 700 million square feet of new construction planned in the span of just 3 years, according to Cushman & Wakefield's Global Office Forecast³.

Many organizations are investing in flexible, smart workspaces, as well as adopting more flexible working policies and practices to satisfy and retain their best employees. These trends align with the uptake of platforms and apps to support occupants and facility managers in smart offices.

Changing work patterns and a Millennial workforce (the generation, born between the early 1980s and early 2000s), who are predicted to make up 50% of the workforce by 2020, are driving the demand for facilities managers and real estate professionals to cater for a higher level of workplace connectivity, mobility, flexibility and occupant choice in workplace environments.

As digital natives and digital dependants enter the workforce, user experience in the design of offices will be paramount. To meet the expectations of the next generation and boost the productivity of those using the office, a greater variety of spaces will need to be available to work with increased connectivity and more personalization.

However, it is by far not just about providing the right space for employees. The changing style of working also means that organizations no longer have a building- and portfolio-wide overview about how space is utilized. This results in inefficient, illogical and therefore costly utilization of space.

Security and privacy concerns continue to act as the major barriers to market growth, while market confusion over the variety of solutions available and a lack of effective systems interoperability and open standards are also holding the market back.

¹ Cushman & Wakefield: Global Office Forecast 2017 - 2019
<http://www.cushmanwakefield.ca/en/news/2017-global-office-forecast/>








Navigating Use Cases 2019







Start of Your Journey















Navigating through the wealth of use cases in the Smart Building landscape is not easy. Although technology is evolving rapidly and offers a vast number of Smart Building solutions, there is no one path on how to transform one's organization into a more human-focused building. There is no predefined sequence of measures to be taken, there is not the first step, second step, etc. The only right way is an individual customized approach. The aim is to understand, evaluate and prioritize one's own use cases. This graphic is intended to visualize possible ways of proceeding towards a more human-centric office building.







CRE Use Cases in 2019








NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
1	 SECURE	ACCESS CONTROL	Limiting access to buildings or specific parts of a building for employees is a fundamental part of overall security. It can reduce the threat of crime and terrorism and help to ensure business continuity.	By limiting access to buildings, employees can be more confident of their personal safety and the safety of their possessions. Real and perceived threats are mitigated.
2	 SECURE	VISITOR MANAGEMENT	Temporary access to buildings or specific parts of a building need to be given to visitors, temporary staff and suppliers. Access control systems can manage this process by providing users with a time limited credentials. This ensures they receive access to the right part of the building for the right amount of time.	Business continuity is ensured as important corporate functions, such as a visitor coming to a meeting, are carried out in a safe and secure manner.
3	 SECURE	THREAT DETECTION	Even with access control systems, intruders can gain access to buildings or secured areas, increasing the physical threat to people and property. Threats may also come from inanimate objects like unaccompanied bags. In situations like this, the threat needs to be detected as quickly as possible so it can be dealt with.	Analytics software packages working alongside security personnel are now capable of quickly detecting many different types of threats and raising an alarm.
4	 SECURE	INCIDENT MANAGEMENT	Once threats are identified, they must be dealt with as quickly and efficiently as possible. Ensuring that evidence is collected and stored properly, should it be required for insurance or law enforcement purposes.	Software like PSIM solutions can be employed to manage critical incidents in buildings or campuses, ensuring rapid and effective responses to potential life threatening situations.
5	 SECURE	PROTECT AGAINST CYBER THREATS	Once threats are identified, they must be dealt with as quickly and efficiently as possible. Ensuring that evidence is collected and stored properly, should it be required for insurance or law enforcement purposes.	Cybersecurity is a process not a product. Ongoing and continuous monitoring of all elements on a buildings IT networks is now essential to ensure continuity of the buildings operation.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
6	 SECURE	PROTECT AGAINST FIRE	Detection and prevention of fire is another fundamental part of overall building security; and is more or less required by law throughout the globe. Fire is a critical threat to not just the building structure but everything inside it.	Detecting a fire as quickly as possible saves lives and reduces the threat to business continuity. There are various electrical and mechanical systems that can be deployed within commercial buildings to mitigate fire risk.
7	 SECURE	SECURE PEOPLE	People are the most important assets within commercial organizations. In the event that threats become more serious, like fire or active shooter scenarios, it may be very useful to know where everybody is within the building so they can be evacuated and accounted for.	Increasingly emergency evacuation systems can be integrated with access control records or real-time location based systems to give an accurate picture of who is inside the building. This aids the job of emergency or law enforcement personnel.
8	 SECURE	SECURE ASSETS	Physical assets within commercial organizations can also be important and expensive. For example, medical equipment in hospitals. Worth protecting not just from theft but also fire. It is now possible to tag valuable assets with sensors, e.g. RFID so it is possible to know where they are at all times.	Implementing an asset management / tagging system can not just reduce 'shrinkage' but also allow assets to be managed and shared more efficiently.
9	 CONTROL	CONTROL OF HEATING, AIR CONDITIONING AND VENTILATION (HVAC)	Temperature and air quality have an impact on the performance of employees and so it is hugely important for a commercial building to provide thermal comfort to its occupants.	Shelter and warmth (or indeed coolness in summer) are basic human needs. The control of HVAC in buildings is now a long established principle, not only providing thermal comfort but also doing so in an energy efficient manner.
10	 CONTROL	LIGHTING CONTROL	Like temperature and air quality, light has a significant impact on employee performance. Natural light and its daily rhythm impacts the cycle of our bodies functions. Light is also a direct cost for the business and should be managed efficiently.	Software systems can be used to ensure the efficient propagation of good quality light throughout the building. For example, ensuring lights are turned off when rooms are not occupied.
11	 CONTROL	UTILITIES MANAGEMENT	Utilities need to be compensated for providing electricity, water, gas and other services to the building. Where the commercial building houses more than one tenant, utility costs need to be split in a fair manner.	Smart metering and other systems can be utilized to ensure the correct allocation of utility costs to different tenants.








NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
12	 CONTROL	ESCALATORS/ ELEVATOR CONTROL	Elevators and escalators are expensive mechanical assets which help to ensure the smooth running of the building, getting people and things to the places they need to be. They need to be controlled in a manner which ensures maximum efficiency and minimum use of energy.	Efficient control of elevators and escalators ensures energy use is kept to a minimum. Also increasingly these control systems can be integrated with other control systems to ensure security. So for example, an access control credential used in an elevator many limit the floors that person is allowed to enter.
15	 CONTROL	FACILITIES MANAGEMENT	Large mechanical assets in the building, such as a heating plant, need to be properly scheduled for maintenance to ensure their ongoing correct function. This not only ensures business continuity but also maximises the value derived from the asset.	Software can be used to ensure that maintenance is correctly scheduled. Increasingly equipment will be shipped with embedded sensors to further optimize maintenance and potentially make it predictive.
14	 CONTROL	CONTROL OF ASSETS	Physical assets within commercial organizations can also be important and expensive. For example, medical equipment in hospitals. It is now possible to tag valuable assets with sensors, e.g. RFID so it is possible to know where they are at all times.	Implementing an asset management / tagging system can not just reduce 'shrinkage' but also allow assets to be managed and shared more efficiently.
15	 CONTROL	BENCHMARKING OF REAL ESTATE PORTFOLIO	Having an understanding of space utilization across an entire portfolio empowers Corporate Real Estate to compare and benchmark sites or regions with industry peers. This in turn provides the means to track utilization goals and notice trends across the portfolio. Anomalies in utilization can be detected in order to derive properties with the need for action.	Comparative data enables the benchmarking of Real Estate Portfolio to help a company assessing the efficiency of space use, discover savings potential and analyse employees' needs and workplace satisfaction in comparison with industry peers.
16	 CONTROL	OVERSEE FLEXIBLE WORKSPACE CONCEPT	Monitoring average utilization of different workspace areas or of different workspace types, reveals which modules in the workspace program are well adopted. Consequently, the workspace concept can be adapted. Also, analysis of utilization by different teams can reveal diverse mobility and work style patterns that can be addressed with the particular space program offered.	These insights allow the analysis and optimization of general patterns to roll-out activity based working globally.
17	 CONTROL	COMPLIANCE MEASURES	Procedure and standardisation are an important part of business. Ensuring that employees comply with correct practices is not just important to the business but also in many cases can be a legal requirement.	Many building systems can be used to help manage compliance. For example, room booking software can be used as a record for which personnel were present in specific meetings. This can be important for compliance in some industries.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
18	 CONSERVE	CONSERVE ENERGY	Solutions used to monitor, manage, control and report on building energy performance in CRE range from building management systems, energy management software and services to IoT-driven platforms to monitor energy and operational efficiencies.	A range of building management solutions can reduce facility carbon emissions and energy costs.
19	 CONSERVE	CONSERVE POWER	Solutions to conserve power range from enabling building to grid applications, such as demand response and load shedding, on-site distributed energy resource management and storage using micro-grids and virtual power plant solutions.	On-site energy generation and distributed energy storage to power Smart Buildings enables more reliable, economic and efficient use of both central and distributed energy resources.
20	 CONSERVE	CONSERVE LIGHTING	Energy efficient lighting solutions can be retrofitted in facilities and upgraded to LED solutions.	The environmental benefits of office renovations are matched by the financial benefits of reduced utility bills.
21	 CONSERVE	CONSERVE WATER	Smart water management solutions can pinpoint the sources of water wastage, detect leaks and notify staff accordingly. Other solutions can monitor the temperature performance of a building's water system, helping organizations to manage Legionella in the building's water system.	Heavy users of water in Commercial Real Estate such as large hotels, hospitals and stadiums can cut operational costs substantially using IoT-driven water monitoring solutions.
22	 CONSERVE	MANAGE WASTE	Smart Building solutions for managing and disposal of waste focus on the use of IoT sensors to monitor objects such as garbage bins and paper towel dispensers to alert Facilities Management staff more efficiently based on predictive data, rather than a schedule-based maintenance system.	Smart waste management and disposal solutions can contribute to overall efficiency and reduce operational costs.
25	 CONSERVE	MANAGE SUSTAINABILITY REPORTING	As environmental considerations become a more important indicator in CRE, sustainability software can support building owners and operators to measure, manage and report the environmental, social and governance (ESG) performance of their portfolios.	ESG software analyzes and reports non-financial data such as energy and water consumption, waste and carbon dioxide output and expenses such as travel and capital expenditures.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
24	 COMMUNICATE	EMPLOYEE COMMUNICATION	Implementing a Smart Building solution can benefit employee satisfaction with the workspace when it grants the possibility to provide occupant feedback on building and workplace related issues. Problems and general feedback can automatically be linked with the user location and transmitted to facility services. So, reports of issues will have one format and the process can be tracked and noted back to employees.	Employee satisfaction can be improved, with simpler, speedier methods of digital communication.
25	 COMMUNICATE	WAY-FINDING AND LOCATION OF KEY FACILITIES	Indoor navigation and way-finding technology, which generally uses ambient Wi-Fi and Bluetooth beacon signals, can provide smartphone users with guidance to enable them to find specific locations within an office complex or campus. Digital signage can also communicate the location of key facilities.	Users of large buildings and campus environments can benefit from digital workplace technologies used for way-finding, enabling them to find specific locations without assistance.
26	 COMMUNICATE	CRE & FACILITIES MANAGEMENT COMMUNICATION	Enabling facility managers and the CRE team to communicate on building-related issues, for example via an app, with both occupants and other facility staff.	Implementing smart communication solutions can increase collaboration between building professionals and users and may result in speedier resolution of issues.
27	 COMMUNICATE	EMERGENCY NOTIFICATION & COMMUNICATION	In an emergency, real-time location based services, mass notification systems or occupancy sensors can automatically help to locate people and guide them out of buildings away from danger and to evacuation points.	Increasingly emergency evacuation systems can be integrated with access control records or real-time location based systems to give an accurate picture of who is inside the building. This aids the job of emergency or law enforcement personnel.
28	 OPTIMIZE	OPTIMIZE SPACE	Insights into the utilization of the workspace build the basis to provide the right number and types of workplaces to meet employee needs. Also, future space requirements on site or even to portfolio level can be planned based on facts and therefore reduce the risk of inaccurate allocation and overspending.	Space optimization and workplace analytics solutions provide an opportunity to close down poorly used building spaces and to invest in spaces that employees appreciate.
29	 OPTIMIZE	MEETING ROOM ANALYTICS	Meeting rooms are one of the most heavily used resources within a company. By measuring their actual utilization, meeting room capacity (size, quantity as well as equipment) can be aligned with team demand. The availability of meeting rooms can also be increased by uncovering and reducing no-shows.	The CRE team can gather real-time space-usage data, which can uncover trends.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
50	 OPTIMIZE	FIND OPTIMAL SHARING RATIO	Most teams have different mobility patterns, which means that varying numbers of employees can be assigned to a workplace. These individual sharing ratios can be determined by measuring team utilization.	The utilization of flexible working environments can be precisely measured and balanced between teams.
51	 OPTIMIZE	ALLOCATION OF OCCUPANCY COSTS	When occupancy costs are charged back to teams based on their actual utilization, it increases accountability for a sustainable use of space resources.	Resource allocation of occupancy costs is supported by real-time space usage data. The efficient use of available space is consequently incentivised.
52	 OPTIMIZE	PORTFOLIO & SPACE PLANNING - CONSOLIDATION	Having a comprehensive overview of building utilization in a real estate portfolio enables the quick identification of sites with the greatest potential for consolidation. So that together with lease data CRE can build a portfolio strategy.	Real estate decisions can be made objectively relying on actionable and future-proof analytics through the use of space optimization and occupancy analytics software.
53	 OPTIMIZE	PORTFOLIO & SPACE PLANNING - GROWTH	Tracking utilization goals and identifying under-utilized buildings ensures that space is managed efficiently and therefore real estate expenses can be reduced. Also, locations with growth potential can be identified to plan and cater for future company development.	Using this data, the CRE team can adopt advanced workplace management strategies and, ultimately, drive more accurate occupancy planning.
54	 OPTIMIZE	CATERING SERVICES	In order to reduce food waste, actual numbers of people in the building help to optimize catering service delivery. Menu planning can be based on daily occupancy data. Using a queue-management mobile app, employees can choose a strategic time to visit the on-site cafeteria instead of waiting in a long line.	Daily occupancy data can help to optimize catering services and to plan overall canteen capacity.
55	 OPTIMIZE	CLEANING SERVICES	Insight into real-time utilization of facilities as well as aggregated utilization time of work areas allows adjustment of cleaning services. Submitting this information to the cleaning service provider enables them to focus on cleaning areas that were actually used.	Platforms which prioritize which areas need cleaning the most, can improve the efficiency of housekeeping routines, reduce cleaning costs as well as work disturbance by cleaning staff.
56	 FIND	FIND COLLEAGUES	Employees can share their current workplace location with colleagues in the office and also share when they will arrive.	Such notifications on an opt-in basis help to reduce search time for colleagues and increase collaboration between them.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
37	FIND	ASSIST VISITORS TO FIND LOCATIONS	An orientation aid for visitors in an office building helps to save time and enables a smooth visit. The location of workplaces or office resources such as printers or bathrooms can be shown, as well as directions from the current position.	Assisting building users in finding specific locations in large buildings of all types and delivering occupants to their destinations quickly and without assistance is a key benefit of indoor location services.
38	FIND	FIND AVAILABLE MEETING ROOMS	A real-time solution for finding available meeting rooms, which meet employee requirements in terms of size or equipment availability, can overcome the difficulty faced by many employees trying to find available spaces. Information about room location and duration of availability can also be displayed.	Increasing employee productivity and reducing frustration is the beneficial outcome of introducing this workplace technology, bearing in mind JLL research suggests that approximately 30 minutes per week per employee are spent trying to locate available meeting rooms.
39	FIND	FIND AVAILABLE WORKPLACES	Working environments with flexible desk concepts make it difficult for employees to find an available workplace such as desks or informal discussion areas which suit their needs.	Real-time occupancy management software can save time and increase employees' positive experience of the workplace.
40	FIND	FIND AND TRACK EQUIPMENT	Monitoring the location of corporate assets is an ongoing challenge for many large businesses. Finding vital equipment, such as laptops, printers, scanners, fire extinguishers or whiteboards in a large office can sometimes be difficult. Digital solutions can enable the location and health of critical equipment in buildings and infrastructure to be visualized throughout the life of the assets.	The tracking and locating of these assets on digital maps can prevent theft, enable equipment to be found quickly when it is needed and also support inventory management processes.
41	FIND	FIND AVAILABLE PARKING SPACES	Visitors & employees often drive to and from locations, so many commercial buildings provide parking facilities. Parking spaces need to be managed. Who has access? For how long? Like any other asset, spaces can be managed to be more efficient. The amount of time required to find free parking spaces can be reduced by installing a digital system.	Implementing a parking management system can save time and reduce stress and improve the user (employee or visitor) experience.
42	PERSONALIZE	THERMAL COMFORT	Temperature variation across building zones throughout the day is a common complaint of building occupants. With a mobile app, individuals can adjust their personal heating / cooling preferences at their workplaces.	Increased employee satisfaction with workplace thermal comfort can translate into higher productivity and fewer work tickets related to occupants being too hot or too cold for the facilities team to address.

NR.	CATEGORY	USE CASE	DESCRIPTION	OUTCOME
45	 PERSONALIZE	LIGHTING LEVELS	Smart Building technology with a mobile app enables occupants to adjust lighting levels to personal preferences at their workplaces.	Personalized lighting can also increase employee satisfaction which may translate into higher productivity.
44	 PERSONALIZE	AIR QUALITY	Solutions for individual monitoring of air quality in a workspace can provide data, insights and recommendations on how to improve it.	Implementing indoor air quality monitoring creates healthier indoor spaces and can increase employee productivity through better indoor air.
45	 PERSONALIZE	NOISE REDUCTION	Solutions to reduce the detrimental effect of noise on building occupants can involve sound masking which helps protect speech privacy, reduce noise distractions, and increase acoustic comfort in offices.	Another solution which can increase employee satisfaction with the workplace.
46	 PERSONALIZE	HEALTH & WELLNESS	Solutions for promoting the health and wellness of occupants in office buildings can involve ergonomic comfort, biophilic design, green walls and access to natural light.	Apart from the obvious benefits of a healthy workforce, research is showing that developers and landlords who invest to create offices that embody the occupier-driven focus on well-being will reap their rewards commercially.
47	 PERSONALIZE	OCCUPANT ENGAGEMENT	Employees can be engaged to give feedback through a smartphone app about their actual work environment and communicate for example a lack of certain equipment or preferred work environment. Based on these insights, the design of the workplace can be adapted to employee needs.	Occupant engagement solutions are an important element in motivating and retaining staff and attracting new talent to the organization.
48	 PERSONALIZE	WORKFORCE MOBILITY & WORK PATTERNS	Employees may use different workplaces during the day. Based on the workforce mobility and nature of work, the identification of work patterns, work preferences, but also “sad spots” enables personalized space optimization according to the work patterns of individual teams.	Occupancy analytics data can ensure personalized work pattern planning and better team collaboration.
49	 PERSONALIZE	WORKPLACE EXPERIENCE	Smart building solutions focused on enabling a personalized workplace experience can be beneficial for all occupants, not only visitors. Digital maps and orientation aids in an office building help to save time and the location of workplaces or office resources and bathrooms can be shown, as well as the way to get there from the current position.	Personal workplace experience is a significant factor in employee motivation and retention.



CONCLUSION:

Embarking on Your Smart Building Journey

We hope that by categorizing and visualizing some of the main uses for technology in buildings, CRE professionals and Facilities Management teams can navigate through the various use cases to focus on what could make their own buildings smarter.

A step-by-step assessment of the desired outcome or purpose for your buildings is necessary to ensure that priorities and budgets are addressed accordingly. After all, technology is the means to an end, not the end itself! By focusing on the “whys” first, the beneficial outcomes of adopting a user-centric building approach can be achieved.

The recent shift in focus in an office environment to improving employee productivity and engagement as the goal for building transformation reflects this user-centric approach, which goes beyond the traditional goal of ensuring that the built environment is clean and safe.

For most organizations, creating the Smart Building will be a journey rather than a sudden leap. Adopting new technologies requires not only financial resources, but also investment in new processes and change management to help end users embrace new tools and systems.

The three steps involved in starting the Smart Building journey are Analysis, Planning and Execution:

1. Analysis

Existing buildings may already provide useful data, but if it is not measured, quantified, or understood on a granular level, it cannot be used. An assessment of where you stand today in terms of evaluating what is already available through existing building systems is the first step in providing some direction as to where the smart building journey could lead. The analysis stage can also engage with various stakeholders to elicit the business needs and gather requirements for the project. A gap analysis can then identify the gaps between current and future requirements, which then leads on to the planning stage.

2. Planning

Based on the overall desired outcome of the project, the team can identify which are the most important capabilities within the Seven Attributes of Smart Buildings and prioritize them. These attributes can provide a framework for creating a Smart Building strategy, aligned to the overall business objectives of Commercial Real Estate owners and operators.

It is easy to become overwhelmed with the range of use cases and solutions available. The best way to approach this problem is to narrow your focus. Don't try to do everything at once; pick a few things and stay on-course.

The end-result of the planning stage is to establish a road map for the implementation phase of a smart building project.

3. Execution

Executing a Smart Building initiative may involve a proof of concept and / or pilot phase to determine the viability of the solution, moving on to a phased implementation and roll-out. Selecting a configurable solution rather than a custom tool can avoid expensive upgrade and implementation costs. The deployment of phased integrations instead of multiple pilots can more effectively determine ROI. And a scalable solution that can grow as your enterprise evolves is also an important factor in ensuring the success of Smart Building initiatives.

We hope that this White Paper guides you through the complex Smart Buildings landscape and stimulates discussion in your organization on the benefits of embarking on a smart building journey.

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