WHITE PAPER

Technology Trends in Commercial Real Estate: Focus on Location Services

"Commercial real estate building owners and management professionals want to know what's happening in real-time in the properties they manage to improve the user experience for both the tenant and the owner."

Technology categories such as the Internet of Things (IoT) and mobile apps are impacting how buildings are managed, providing more flexibility to users, and more data to building owners. Another technology poised to transform the commercial real estate market is real-time location systems (RTLS), which can automatically identify and locate objects or people within a building or other specified area.

HID Global commissioned a survey of end users, including facility, building and operations managers and directors, to provide insight about the challenges associated with building management. The survey covers the use of various technologies in the real estate market and how industry professionals will create safer, more secure and operationally efficient workspaces now and in the future. This report will highlight the results of that survey with additional commentary, focusing especially on RTLS.

NEED FOR THE TECHNOLOGY

"Commercial real estate building owners and management professionals want to know what's happening in real-time in the properties they manage to improve the user experience for both the tenant and the owner," says Taylor Breihan, Global Business Development Manager, Location Services at HID Global. "They want to know how the space is being used. Are the conference rooms booked? Given the trends to 'hoteling,' remote employees, and the use of 'hot desks,' real data is needed on actual usage. They are being told there isn't enough space, but what is the reality?"

The **HID Global Building Occupancy Survey** confirms end users' need for more information on building occupancy. Some 48.4% of survey respondents say they do not know either the number or location of employees or visitors on their premises at any given time. Of the respondents, 18.2% say that they know both the number and location; 23.1% say they know only the number, and 10.5% say they know only the location.

Some 35.8% of survey respondents are "very aware" of the number of people in their buildings in real time; another 48.6% are "somewhat aware." Only 15.6% are "not aware." Fewer can accurately determine who is in their buildings at any given time: 41.6% say they can, but 58.4% admit they cannot.

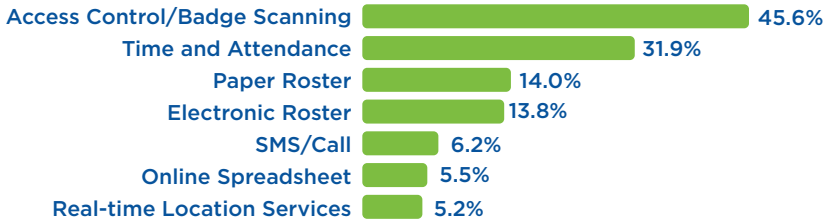
Breihan observes that the percentages can vary widely by industry. For example, a financial institution would be much more likely to know who is in their buildings than a real estate entity, tech company or medical facility.

KEEPING UP WITH EMPLOYEES AND VISITORS

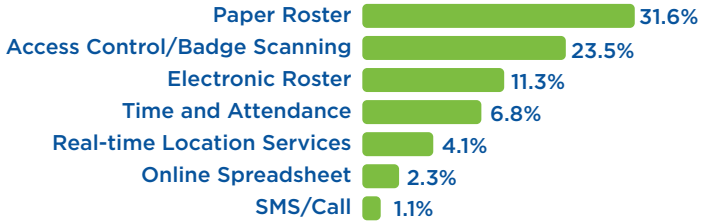
Knowing who enters the building and who has left the building provides information to both building management and security professionals in order to create resource and safety efficiencies. Are consistently unoccupied areas using energy to light or cool? Are there visitors left in a building during a life safety event? The survey includes several questions on methods currently used to monitor employees, visitors and occupancy.

"RTLS delivers the right data at the right point in time, thus enabling partner companies to build valuable applications such as building utilization and locations of people and assets. Beyond optimizing space utilization, RTLS data provides benefits for emergency management, protecting restricted areas, and visitor and asset location awareness."

Respondents* indicated the most common systems used to monitor employees, their location and building usage throughout the day. In decreasing order, they are access control/badge scanning (45.6%), time and attendance (31.9%), paper roster (14.0%) and electronic roster (13.8%).

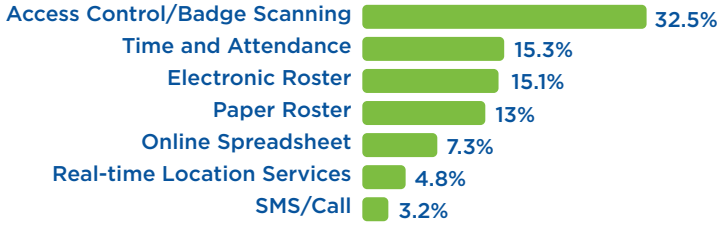


To monitor visitors, their location and building usage during their time as a guest in a building, the most commonly used method* is a paper roster (31.6%), followed by the access control system/badge scanning (23.5%), and an electronic roster (11.3%).



DETERMINING BUILDING OCCUPANCY

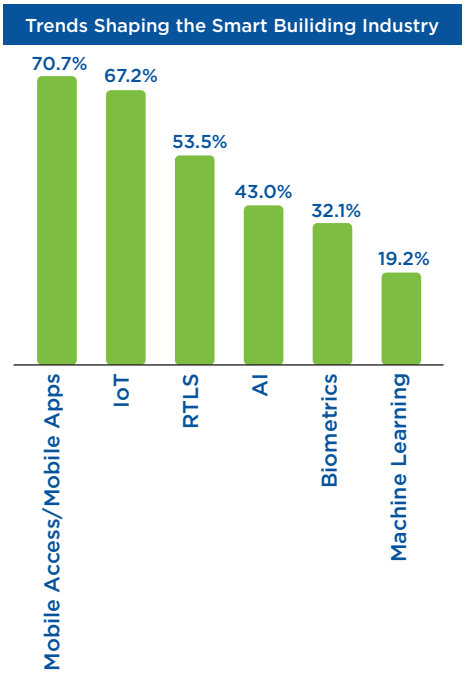
To determine general building occupancy, the most common option is access control/badge scanning (32.5%). Other methods* include time and attendance (15.3%), electronic roster (15.1%) and paper roster (13.0%).



"We need to open eyes that access control is not enough; there is a better way," says Breihan.

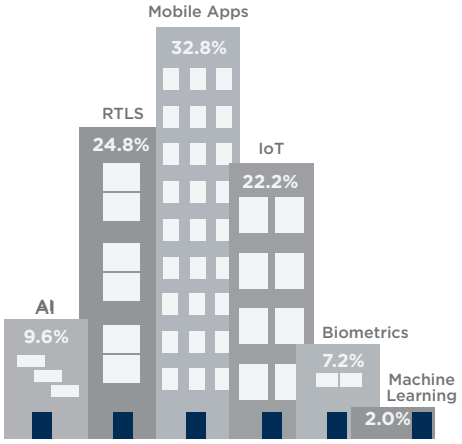
RTLS technology has been around for a decade and has recently become more accessible and affordable. Component prices have decreased; battery life has increased. Bluetooth Low Energy (BLE) is an enabling technology that has become more widely used. Even Apple is jumping into the location business with recent notices about UWB (ultra-wide band chips) in their latest devices. This is still years away from full commercial use, but a hybrid of UWB and BLE will be the future.

"RTLS provide reliable, continuous real-time positioning of people inside a building," says Peter Eriksson, IoT Solutions Manager at HID Global.



MOST IMPACTFUL TECHNOLOGIES FOR BUILDINGS

The survey sought to evaluate the impact of RTLS compared to other building and facilities management technologies. Among respondents, mobile apps for system management were rated the top most impactful technology advancement (32.8%) as it relates to improving building and facilities management. Real-time location services for people were listed as the second most impactful (24.8%), followed by cloud/Internet of Things (22.2%). Less impactful technology advancements are artificial intelligence (9.6%), biometrics (7.2%), and machine learning (2.0%)



"Mobile apps and usability go hand-in-hand, providing flexibility for on-the-go building technology," says Breihan. "People want to use mobile apps on phones for space utilization to determine available conference rooms and open desks. Mobile apps give you better accessibility to technology, but if you don't do it in the right way, it won't be adopted. The user experience is a differentiator for products, as we have seen with Apple and others. An app is providing an interface/software to use other systems."

Respondents listed mobile access/mobile apps as the most common response (70.7%) when listing the top three trends shaping the smart building industry in the near future**. Other top trends are the cloud/Internet of Things (67.2%), real-time location services for people (53.5%), artificial intelligence (43.0%), biometrics (32.1%), and machine learning (19.2%).

"People, especially the millennial generation, are realizing now that I have a phone, I can be located via GPS and cell towers," says Breihan. "The consumer market is driving the commercial market. People are associating experiences in their private life with experiences in business. When you experience something in your personal life, you relate it to your business life and say 'why not?'. Innovation will start to pick up, and we are seeing it today with HID's Seos®-enabled credentials now being added to Apple Wallet in the education market."

EMERGENCY RESPONSE PROTOCOLS

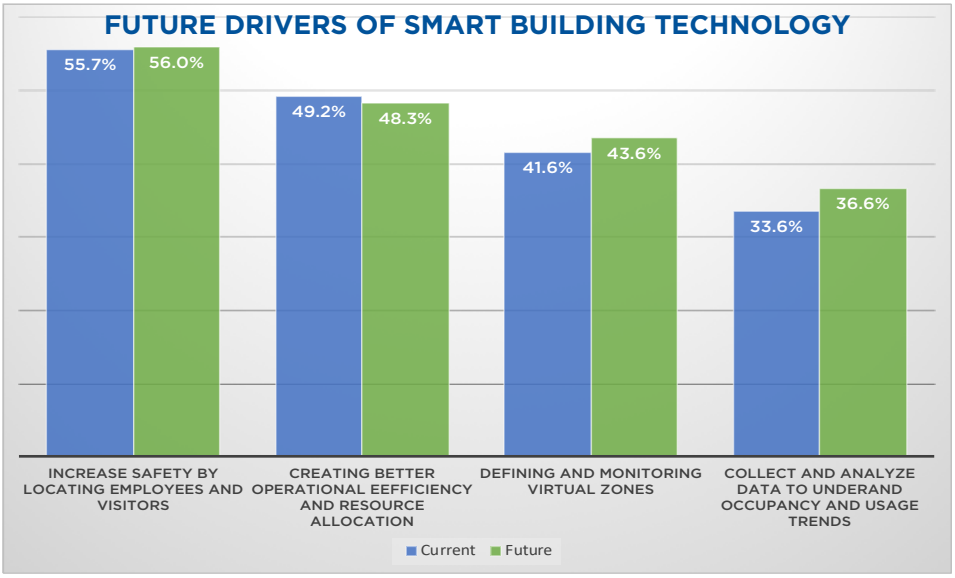
"People have a basic knowledge of who's in the building now, based on things like turnstiles and who badges in and out. But what happens in an emergency?" Breihan asks. "I may know people are in the building, but where in the building, or is it possible they exited by piggybacking on another employee's credential?"

Many organizations have emergency response protocols* in place, most commonly for fire emergency (94.2%), natural disaster (70.8%), active shooter (62.1%), health emergency (51.9%), and biohazard (42.8).

To account for people within a building during an emergency, a paper roster is the most common option (29.5%), followed by access control (23.5%), electronic roster (17.2%) and time and attendance (14.7%).

"Organizations have policies in place, but how effective are those policies?" asks Breihan. "When the entire building is evacuating during an alarm, access control is ineffective for locating employees or visitors left inside. Given General Data Protection Regulation (GDPR) and privacy concerns, data is anonymized."

"There is an ever-growing need to optimize workspace utilization. Location and occupancy data is required to help facility managers make informed decisions when to expand or decrease the amount of space needed for operational efficiency."



Multi-national organizations have specific challenges with regard to location awareness. For instance, video is not GDPR compliant in France or Sweden. And when European employees come to the U.S., video locating could result in a fine.

DRIVERS FOR ADOPTION OF AUTOMATION

What are the current drivers for greater adoption of automated building systems such as RTLS? Survey respondents, asked to choose their top three** listed the ability to increase safety by locating employees and visitors during emergencies as the top current driver (55.7%) to implementing automated building systems.

Other drivers include creating better operational efficiency and resource allocation (49.2%), enhancing security by defining and monitoring virtual zones (41.6%), and the ability to collect and analyze data to understand occupancy and usage trends (33.6%). Lesser drivers include improving user convenience (27.8%), meeting regulatory compliance or policies (23.4%); understanding security policy adherence, such as the extent of piggybacking (20.4%); and better integration with other enterprise systems (18.2%).

In terms of future drivers to implement automated building systems, the top one in the survey is increasing safety by locating employees and visitors during emergencies (56.0%), followed by the ability to create better operational efficiency and resource allocation (48.3%) and enhancement of security through defining and monitoring virtual zones (43.6%). Other future drivers include the ability to collect and analyze data, and understand occupancy and usage trends (36.6%), improved user convenience (31.1%), meeting new regulatory compliance or policies (24.5%), better integration with other enterprise systems (19.5%), and understanding policy adherence, such as the extent of piggybacking (11.1%). Lesser drivers include environmental/green initiatives or certifications (10.8%) and establishing a more sophisticated/modern brand image (2.5%).

GAINING NEW EFFICIENCIES

What efficiencies can be gained by knowing the occupancy of a building? In the survey, the most commonly cited gain* is increased safety with the ability to locate people in emergencies (77.2%). The number is up from 67.8% compared to a similar survey in 2017. Also named in the current survey are enhanced security with the ability to monitor restricted areas (59.7%), optimized energy usage/allocation (57.4%), and improved operational efficiencies (54.4%). Also mentioned was a greater ability to meet regulatory compliance with visibility into utilization and entry/exit (28.6%).

Many respondents (42.1%) admit to not knowing when employees or visitors have entered restricted areas. Fortunately, 58.0% know when restricted areas are entered.

The biggest immediate return on investment (ROI) for RTLS is the potential to maximize utilization of the workplace, according to Eriksson. "Most offices worldwide are around 50 percent under-utilized on any given day," he says. "There is an ever-growing need to optimize workspace utilization. Location and occupancy data is required to help facility managers make informed decisions when to expand or decrease the amount of space needed for operational efficiency."

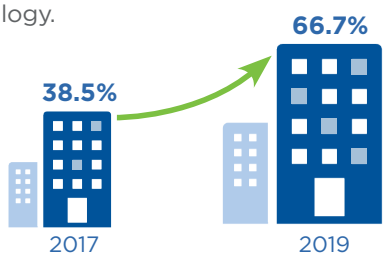
A key additional benefit is increased security and safety of employees as critical emergency response protocols can be improved by easy and simple access to location data.

Maintaining restricted areas is another benefit of RTLS. In commercial real estate, there is a growing trend toward open workspaces. However, not everyone should have access to all parts of the building. Some employees may not have the certification or training to equip them to be in a certain area. There may be sensitive data in an area, which can raise issues of compliance.

"Putting borders and barriers around things to achieve a policy addresses just part of the problem," says Breihan. "Having a system that manages where people are going in real time is the challenge. They know it's happening but can't get the data to prove it's happening."

TRACKING THE ADOPTION CURVE

Awareness of real-time location monitoring is on the increase. About two-thirds of respondents (66.7%) say they would benefit from technology that provides real-time location monitoring, such as platforms designed to deliver occupancy data for higher security, increased safety and optimization of resources. The number has increased substantially compared to the result of a 2017 survey, in which only 38.5% of respondents said their organization would benefit from a technology to track employees in real-time (Real-time Location-Based Tracking Software). In the current survey, only 33.3% of respondents say they would not benefit from the technology.



About 41.7% of respondents say they are in the "early majority" in terms of their building management, automation and/or security "technology adoption curve;" that is, they take time before adopting technology but are willing to embrace it with the right use case. Another 21.9% say they are in the "late majority: willing to embrace proven technology, but the uncertainty must be removed." Only 7.7% are innovators/risk takers; and another 20.5% are early adopters, i.e., selective about which technologies to invest in and highly informed.

"This technology has been around for 10 years, but it was expensive," says Breihan. "Trials may have failed because the technology was not as mature. People are careful, which is why there are so many pilot programs."

EMPLOYEE ACCEPTANCE OF REAL-TIME LOCATION MONITORING

How well do employees accept the idea of real-time location monitoring? A vast majority (65.7%) are either open to some extent to the idea or neutral on the subject. According to the survey, some (19.7%) are either "very open" or "somewhat open" to the idea. Another 23.7% are "open if they are provided education on the platform and how it works." Another 22.3% are neutral. Less than half (34.2%) are not very open or not open at all.

An HID Global survey in 2017 showed that a fourth of respondents (26.1%) think their organization's employees were open to the idea of real-time personnel location monitoring – either "very open" or "somewhat open." In 2017, another 48.8% expected employees to be neutral on the subject. The current survey highlights the value of education to allay concerns to interest more employees in the subject.

"Younger employees grew up with technology and are aware, for example, that Google is collecting their data," says Breihan. "We must educate employees to understand how the technology works, how data is anonymized."

The data from an RTLS system is anonymous, based on the locations of BLE "beacons" or transmitters, not people. A system administrator may associate the BLE beacons with badges or ID numbers. An infrastructure of readers inside a facility provides location calculations to a cloud server. The system covers only the workplace.

Understanding the value and benefits of location services increases technology and solution acceptance, says Eriksson. All project stakeholders should understand the platform, why it is being implemented, and the value it provides both for individuals and for facility management. For employees, RTLS provides a higher level of personal safety, especially in an emergency situation where understanding the location of employees is critical. There are also benefits in a smart workplace environment, where location information guides systems that provide added convenience and can adapt the work environment.

"Being up front and open about the reasons why you are using RTLS ensures acceptance will be very high," says Eriksson.

About the Survey: Respondent Demographics

Here is a look at the demographics of the 439 survey respondents.

— Respondent's role: Largest groups are facility, buildings or operations managers (35.3%), VP/Dir of facilities (14.6%) and owner/president (13.2%).

— Industry they work in: Largest are commercial real estate, government, higher education, -12 education, manufacturing and industrial, and professional services.

— Company size: Largest categories (in decreasing order) are under 100 employees, 101-500 employees, 1001-5000 employees, and 501-1000 employees.

— Number of facilities: 38.8% have 21-plus buildings, 23.7% have two to five; 13.2% have six-10 buildings, 12.8% have one building; and another 11.4% have 11-20 buildings.

**Indicates survey questions that allow multiple answers, so total of percentages exceeds 100%*

***Indicates a question that allowed for multiple selections and respondents were asked to select the top three*

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