Make Your Digital Workplace Employee-Friendly With These Six IoT Best Practices

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The rapidly changing dynamics of today's workforce demand a more flexible, intelligent and connected workspace. This research will help application leaders for the digital workplace prioritize use cases with IoT and work with their real estate team to provide an exceptional employee experience.

Key Challenges

- Application leaders who are challenged by low satisfaction among employees for their workspace are looking for ways to respond to this growing pressure from both the business and the workforce by reimagining physical spaces.

- Surveys on office space utilization corroborate that the average utilization rate of office space is around 65%. Also, the global average utilization rate of meeting rooms is just 30% and around 40% of global office space remains empty.

- Internet of Things (IoT) enable application leaders to cater to the problem of employee satisfaction by enriching employee journey maps (such as seamless access, automatic room and desk booking, and colleague or way finding) from the moment they enter the office to creating a conducive work environment by smart temperature and light control.

Recommendations

Application leaders considering IoT to enhance their digital workplace programs must:

- Develop a smart workspace strategy that encompasses the shortlisted use cases by partnering with corporate real estate leaders and IoT experts; make the program a team sport.

- Design flexible, activity-centric workspaces to better meet employees' evolving workspace needs by analyzing IoT sensor and connected system data on how space is being utilized. Work with HR and line managers to optimize this.

- Create a comfortable working environment that boosts productivity by harnessing IoT to provide personalization and control over office temperature and lighting via mobile apps. Do a review of options with employees at least every six months.

- Create a seamless experience for employees by investing in connected wearables for accessing facilities, automatically allocating seats and locating colleagues. Work with HR and compliance to take into account any employee privacy concerns and local regulations.
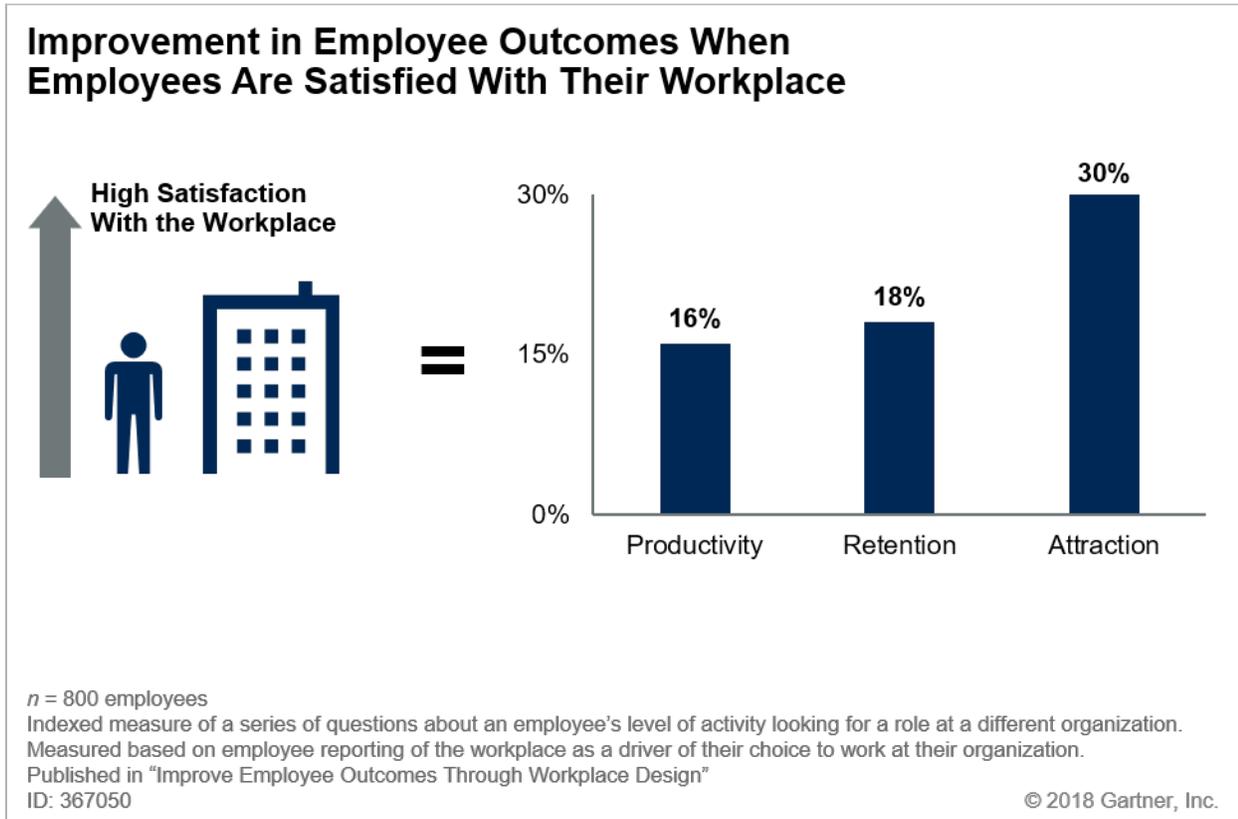
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Strategic Planning Assumption

By 2021, an increase in remote employees will allow organizations to support 40% more workers in the same office space as they use today.

Introduction

Physical workspaces and the way they are managed have a huge impact on employees' satisfaction, productivity and overall experience, thus contributing to their engagement level (see Figure 1). The direct correlation between employee engagement and business performance is well-established (see Note 1). Employees who are satisfied with their workplace are 16% more productive, 18% more likely to stay, and 30% more attracted to the company over competitors.

Figure 1. Improvement in Employee Outcomes When Employees Are Satisfied With Their Workplace

Improvement in Employee Outcomes When Employees Are Satisfied With Their Workplace

High Satisfaction With the Workplace =

- Productivity: 16%
- Retention: 18%
- Attraction: 30%

n = 800 employees
Indexed measure of a series of questions about an employee's level of activity looking for a role at a different organization.
Measured based on employee reporting of the workplace as a driver of their choice to work at their organization.
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Base — All respondents that responded "strongly agree" to the statement "I am currently satisfied with my physical workplace" in Gartner Real Estate Survey Impact. Published in "Improve Employee Outcomes Through Workplace Design."

Source: Gartner (August 2018)

Imagine the following scenario for one of your employees on a Monday morning: — "Adam got up a bit late and suddenly remembers that he has a 9 a.m. meeting with a client and colleague. He rushes to the office, spends 10 minutes searching for a parking space and realizes that, in the haste, he has forgotten his access card. After a call to reception, he gets in and quickly searches for an available meeting room, but the booking system shows all rooms as occupied. While seeking out his colleague, he sees that the room that the booking system showed as occupied is completely free. Finally, after the struggle, he finds a room in which to carry out the meeting and calls his colleague. After the meeting, he finds a spare desk, but soon realizes that the area is too cold and the lighting above too bright, which ultimately hampers his productivity while working on a critical client proposal throughout the day."
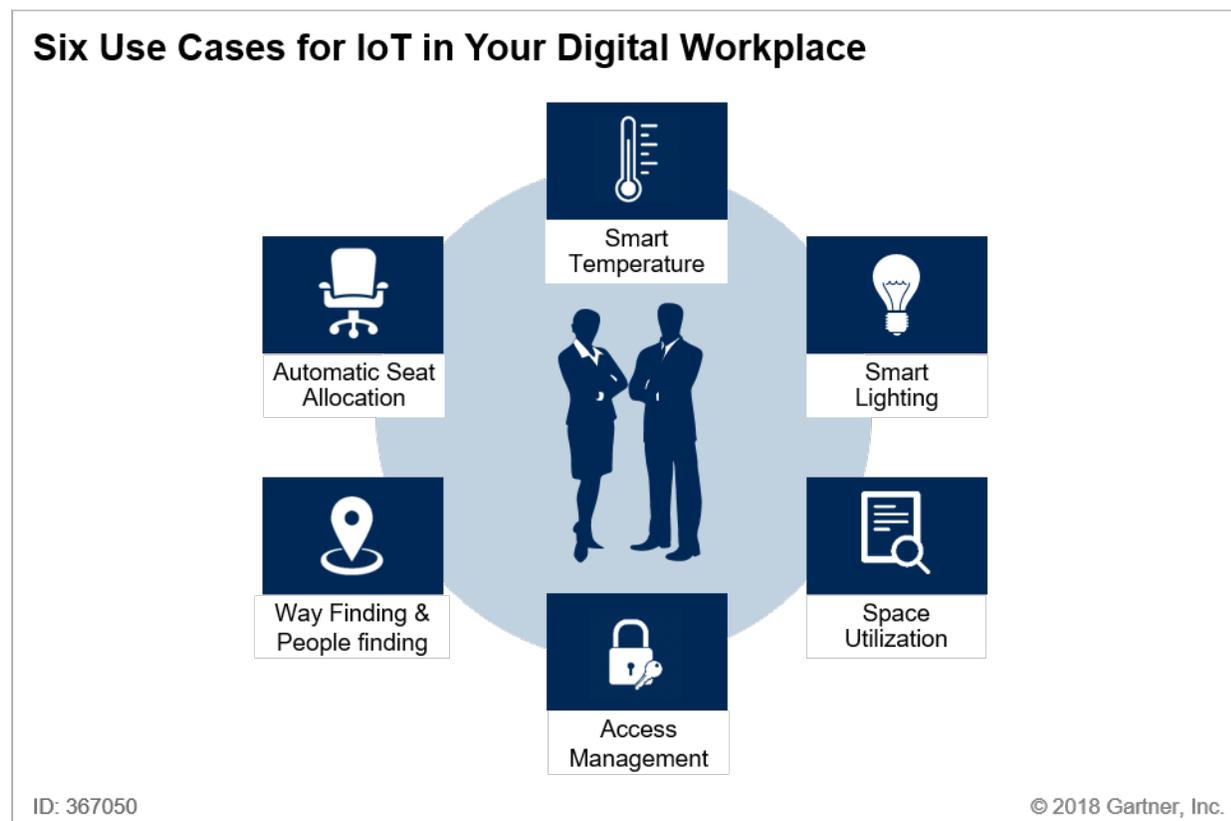
In Gartner's Digital Workplace Survey[1], just 11% of respondents said they were completely satisfied with their physical workspace. Real estate and facilities management leaders understand this, and are looking for ways to respond to the growing pressure from both the business and the workforce. Application leaders working on digital workplace programs are well-positioned to work with their facilities managers and corporate real estate (CRE) leaders to achieve the common objective of bettering the employee experience.

Facilities managers and real estate leaders can build beautiful workspaces, but it can only come to life when IT, facilities and real estate work together to add a technology layer. With the increasing availability and affordability of smart workplace technologies, digital workplace leaders are equipped to not only provide basic technology requirements (such as laptops, Wi-Fi, conferencing software etc.), but deliver exceptional employee experience. The benefits of adopting smart workplaces include:

- Improving the employee experience, which leads to better productivity, happiness and engagement. This improves an organization's brand for attracting new talent.

- Optimizing real estate-specific building operations.

- Cost savings through better space utilization.

- Contributing to a broader digital workplace strategy and goals.

As the race toward digital business intensifies, an organization's talent will be its core differentiator. This document outlines the various use cases where IoT can be harnessed to provide flexible, intelligent and connected workspaces.

Figure 2. Six Use Cases of IoT in Your Digital Workplace

Six Use Cases for IoT in Your Digital Workplace

Smart Temperature

Automatic Seat Allocation

Smart Lighting

Way Finding & People finding

Space Utilization

Access Management

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Source: Gartner (August 2018)

Analysis

Harness IoT for Creating the Perfect Working Environment

Why is this important:

- Research from the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) shows that offering a building's occupants greater control over the temperature and lighting of their workspaces — via a customized mobile app, for example — can contribute to direct productivity gains of 0.5% to 5%.[2]

- In a survey of 1,063 office workers (including decision makers) in London, 53% of respondents stated that they would like to be able to personalize the heat and light settings for their immediate space, and have those settings follow them around the building.[3]

- The U.S. General Services Administration (GSA) conducted a Green Proving Ground (GPG) program to evaluate the performance of socially driven heating, ventilation and air conditioning (HVAC) at the Federal Building and U.S. Courthouse in Phoenix. It found that HVAC increases

tenant satisfaction with workplace thermal comfort by 83%, while delivering average energy savings of 20% (cooling) and 47% (heating).[4]

- People who work in well-ventilated offices with below-average levels of indoor pollutants and carbon dioxide (CO_2) have significantly higher cognitive functioning scores in crucial areas such as responding to a crisis or developing strategy. This finding is part of a new study from the Harvard T.H. Chan School of Public Health's Center for Health and the Global Environment, SUNY Upstate Medical University, and Syracuse University.[5]

Lighting and temperature, therefore, greatly affect the stress levels and comfort of workers. In addition, it can produce the direct benefit of reduced energy costs.

Traditional workspaces:

Employees continuously call the facilities maintenance help desk and raise tickets to increase or decrease the temperature around their workstation. The lack of ability to control lighting and temperature hampers productivity. Employees are continuously searching for places that are suitable for their temperature and lighting requirements.

Smarter workspaces:

Within a smart workspace, sensors can detect and trigger the control of lighting and thermal comfort. For instance, some companies already provide mobile applications and smart technologies that allow employees to customize the temperature and lighting in their workspaces. Also, the technology is aware whenever there is a problem in the building, and by using self-diagnosis or alerting the responsible party, issues can be resolved much more quickly. The ability of workers to tweak the temperature and lighting in their workspace — at their desk or in a meeting room — reduces temperature complaints and improves employee productivity and happiness.

Smart lighting is emerging rapidly and, in addition to energy savings, it has the potential additional business impact of providing management with a clear understanding of space utilization, which can lead to a reduction in their real estate footprint. Hence, Gartner predicts that, by 2020, 70% of new commercial building lighting installations will implement smart lighting. Please see "Market Insight: Living With Intelligent Lighting Systems" and "Market Guide for Smart Lighting" for a detailed understanding of the market and the vendors in it. Government regulations to reduce energy consumption, such as the U.S. Department of Energy's position on lighting, the EU's Ecodesign requirements for lighting and California's Title 24, are playing a major role in the emergence of smart lighting.

The adoption of smart thermostats is also rapidly increasing in "smart homes." Employees who use these devices at home expect similar experiences everywhere they work. Research indicates that the adoption of smart thermostats reached 13% in U.S. broadband households in 2017, up from 11% in 2016.[6]

Related technology:

Strategic solutions to support such use cases are "intelligent building automation systems." They manage power distribution, HVAC and energy usage; lighting; access controls; surveillance and

security; and on-site energy generation. Building automation systems (BASs) also coordinate with the integrated workplace management system (IWMS) to ensure the comfort and welfare of the building's occupants (see "Hype Cycle for the Internet of Things, 2018").

There are some innovative vendors entering this space. Comfy, for example, integrates with the client organization's HVAC system so that employees can submit requests on their mobile app to tweak the temperature in specific zones (see "Cool Vendors in the Digital Workplace, 2017").

Recommendations:

- Identify the most common struggles that employees face with facilities, and determine if the issue related to temperature and lighting is persistent.

- Deploy smart lighting as a part of your digital platform to leverage additional capabilities, such as space utilization, to go beyond energy savings and, hence, easily justify the upfront cost of implementation.

- Adopt a path toward a single IoT platform that can proactively and seamlessly manage the building's energy and operations infrastructure.

- Work with CIOs to ensure you have the right talent in terms of professionals that understand operational technology (OT) networks and the integration of software platforms.

Craft Activity-Centric Workspaces by Understanding How Space Is Being Used Through IoT Technologies

Why is this important:

- Sixty-seven percent of respondents in a CRE survey believe that real estate portfolio agility is critical to ensure their overall success.[7]

- The average employee spends a staggering 27 hours each year looking for the best space to work over the course of the day — costing the average company $31 million in productivity annually.[8]

- Surveys on office space utilization corroborate the increase in remote-working trends, with the global average for empty spaces at around 40%. The average building wastes 30% of its energy through inefficiencies, such as lighting, heating and cooling areas that are not occupied.[9]

- The average utilization rate of office space is around 65%.[9]

- The global average utilization rate of meeting rooms is just 30%.[9]

Traditional workspaces:

Common practice has been for employees to use an app or Microsoft Outlook to reserve a desk or meeting room. The individual checks into the meeting room or desk via a RFID card or a touchscreen system.

CRE leaders plan office spaces just based on head count, one-time surveys or guesswork, and design them based on standard industry ratios. They can achieve better results if they have an understanding of how their employees actually use the office space, and if they use analytics to plan for their future requirements.

Smarter workspaces:

Often, the reservation app or Outlook calendar might say that no space is available, when in reality many meeting rooms are empty. If a company utilizes sensors to track the actual usage of its meeting rooms, it can help in two ways:

1. With sensor technology, an individual doesn't have to manually sign in or out with their card, thus providing a seamless experience. Sensors will recognize when that person enters or exits a room, which can assist in knowing when meeting rooms are in use. In case people don't show up for a meeting or forget to cancel it (which is common with reoccurring meetings), it can then automatically set the meeting rooms to free to be booked by other employees. Considering the aforementioned scenario where Adam was searching for a room, with sensor technology, he would easily to able to see the free room within his room booking application.

2. Another important advantage for an organization in the context of meeting room utilization is capturing its actual usage versus perceived usage. For example, a meeting room has a capacity of 15 people and is often on a long wait list. However, sensor data shows that the average booking for the space is only for 5 people. With the help of data from sensors, companies can create different scenarios to make best use of the space. Perhaps the best option for that space is to create two or three smaller meeting rooms, or one 10-person room coupled with smaller meeting rooms.

The depth of understanding regarding office space utilization should not be limited to meeting rooms. With an increasingly mobile workforce, a company may find that it can accommodate an influx of new employees without increasing its square footage — or possibly even shrink its footprint. Hence, Gartner's prediction that, by 2021, an increase in the number of employees who prefer to work remotely will allow organizations to support 40% more workers in the same amount of space as they use today. Real estate is usually the second most expensive line item on any balance sheet, and leading organizations can take advantage of this trend by understanding their current utilization levels.

Many companies utilize technology for space planning and optimization. Coupling it with IoT can provide more-accurate guidance that better meets employees' needs. In cases where digital workplace leaders want to implement activity-based working, they need an understanding of which space types contribute to increased employee effectiveness. IoT technology can provide an accurate view of which space types employee needs more and which are underutilized. Does a company require more huddle spaces or phone booths? Do some employees want to work in neighborhoods where they are close to colleagues doing similar work? Over a period of time, analyses of utilization data will enable real estate organizations to more-effectively plan not just for the long term, but also for special situations (for example, the end of quarter, when the entire sales team is in office, or when there are unforeseeable factors affecting the office space, such as the weather). As a result, workspace agility becomes very important so that office space can be flexibly

configured. In fact, flexibility is a key component of engagement, with 88% of highly engaged employees reporting that they have the ability to choose where they work depending on the task at hand, compared to 14% of highly disengaged workers.[10]

Related technology:

A number of integrated workplace management systems (IWMS) vendors, such as Planon and FM systems, and resource scheduling vendors, such as Condeco and EMS Software, have experience and a strategic vision for IoT, and can be harnessed for such use cases (see "Market Guide for Integrated Workplace Management Systems" and "Market Guide for Resource Scheduling Applications" for an understanding of the vendor offerings and market). There are some "pure-play" space management vendors, such as Serraview and SpaceIQ, that can also support many of the above use cases.

Recommendations:

- Harness IoT technology from an IWMS or resource scheduling vendor to understand actual usage versus perceived usage and adjust your workplace strategy accordingly.

- Evaluate vendors based on their alignment with your smart workspace strategy, keeping in mind the identified use cases and the need for flexibility for the future.

- Prioritize employee experience and effectiveness over cost optimization while redesigning workspaces.

Provide a Seamless Experience to Employees by Using IoT for Access Management, Automatic Seat Allocation and Colleague Finding

Why is this important:

- The global wearable electronic device market is forecast to be worth more than $50 billion in 2021. The device market consists of smartwatches, HMDs for VR and AR, wristbands, body-worn cameras and other types of wearables.[11]

- Gartner forecasts that 21.9 million units of smartwatches and 37 million units of HMDs will be shipped in 2021 to business buyers.[11]

- 4 in 10 U.S. office workers spend as much as 60 minutes every week searching for available desks, conference rooms or colleagues, which translates to a staggering 160 million days every year wasted.[12]

- With the increase in consumerization, organization are well-positioned to harness the trends in wearables for a better employee experience. For example, access management with a smartwatch or phone, understanding employee behavior, delivering personalized information to workers based on proximity and helping them find a seat near a colleague. It can also enhance security as employees are less likely to forget or share a wearable device versus an RF ID card.

Traditional workspaces:

Employees spend a lot of time searching for parking, meeting rooms and colleagues, and use an RFID card to check in to the office and workspace areas.

Smarter workspaces:

There is a growing range of different devices (notebooks, tablets and smartphones and wearables) that users use in their daily work life and are bringing to their workplace as well. There are a number of ways in which digital workplace leaders can harness this trend by connecting these things together and to the physical and virtual work environments.

Access management: Using wearables (smartwatch, smart badge etc.) to authenticate employees for access to buildings, meetings rooms, equipment, devices and data. Smart wristbands could become ID badge replacements (or smart ID badges could be created) in the office space. qFor example, the building recognizes your car when you arrive, authenticates it, and then directs you to a parking spot, thus providing a more seamless user experience. In future, wearables will become an integral part of a multifactor authentication process. So, now Adam does not need his ID badge, which he is likely to forget, to access the office (see "Hype Cycle for Wearable Devices, 2018" for details on smart badges, smartwatches, wristbands and other wearable technology).

Automatic seat allocation: Instead of wasting time looking for places to work and conduct meetings, a smart workspace can proactively carry out such routine work. For example, a digital workspace app on employees' mobiles would not only allow employees to book rooms and seats manually, but could so automatically when they enter the office. Integration with employees' calendars would enable the system to send smart prompts to devices.

Way finding and people finding: Knowing the location of a person or thing unlocks many contextual digital workplace opportunities; examples include asset tracking, improving worker safety, understanding employee behavior, predicting needs, and providing new services in the smart office. Location-sensing technologies provide the essential foundation for a wide range of location services. In the past, many location services were associated with smartphones, but the growth in the IoT has created the opportunity for a much wider range of objects to become location-aware or to be tracked. As companies adopt more free-desking options in designing workspaces, people finding becomes a basic necessity rather than good to have.

Automated workplace services: The futuristic smart workspace will also include the concept of staff scripting interactions, workflows and services that involve physical and information equipment. So, the future smart workspace may involve anything from simple tasks, like turning on the coffee machine when the office door is unlocked in the morning, to complex rules about contextual access control based on identity, tasks and so on. It could also be linked to external suppliers for ordering coffee or food for meetings when a meeting room is booked, or to more-complex tasks around linking different suppliers with users' activities in the office. The office becomes a scriptable space, both logically and physically, and employees have more-sophisticated ways to configure it to their own personal needs. The smart workspace will also enable ideas around more-sophisticated tracking and charging for usage. Maybe there would be internal recharges to business unit managers based on desk hours or differential charging based on the size of rooms used (using location tracking).

In the midterm, wearables are also likely to enter the smart workspace in other capacities. For example, as a channel to communicate with a larger device through voice. For example, you talk to the wristband, which passes your words on to a VPA. HMDs and smartglasses for specific vertical solutions (logistics, medicine/healthcare, engineering, field services and automotive) are likely to be early deployment opportunities. For detailed understanding of such use cases, please see "Market Trends: 5 Forces in Wrist-Worn Wearables Shape Buying Behavior and Sales."

Data privacy: While there are many opportunities to leverage employee data for positive outcomes, that data could just as easily be misused, leading to greater loss than anticipated benefit.[13] The data is personal data and, therefore, falls in the scope of data privacy and protection regulations. Specific frameworks, controls and communications need to be in place to ensure that the usage of the data is ethical and aligned to the specific purpose of collecting the data. Deliver workplace analytics to employees rather than focusing on management reporting. Make sure employees have a choice to opt in or out, and that they understand the benefits of technology versus the potential threat it poses as an invasion of privacy (see "Digital Ethics, or How to Not Mess Up With Technology, 2017"). Work with HR to ensure you meet all local privacy legislation (see "How to Use Workplace Analytics to Accelerate Business Performance").

Related technology:

Smart badges are continuing to grow in popularity among organizations for access control use cases due to the benefits of customizable context, easy-to-see display and added functions for single sign-on (SSO). Example vendors include E Ink, Group Dynamics, Hitachi and Humanyze. Enterprises are also considering smart badges as a new way to gather insights to improve workplace efficiency, team effectiveness and individual performance (see the smart badges innovation profile in "Hype Cycle for Wearable Devices, 2018" for details).

A number of digital workspace app solutions, along with IWMS vendors. can be used to support seat allocation and colleague finding use cases (see "Hype Cycle for the Digital Workplace, 2018" for further details on this technology).

Recommendations:

- Harness the influx of wearables in your workplace by partnering with IoT experts, and determine use cases that can provide a seamless user experience.

- Evaluate smart badges to determine if they enable data analytics to provide insight into how to improve organizational effectiveness rather just access management.

- Anonymize the data and be sensitive of privacy concerns. Make sure employees have a choice to opt in or out, and that they understand the benefits of technology versus invasion of privacy.

Now let's reimagine the earlier scenario in the context of a smart-enabled workplace: Adam got up a bit late and suddenly remembers that he has a 9 a.m. meeting with a client and colleague. He rushes to the office and, as he reaches the office gate, it detects his smart wristband and conducts an authentication check. The gate opens and the system sends a recommendation to his mobile device for a parking slot. A soon as Adam parks the car, he gets another smart prompt on his

mobile device that reads "Hey Adam, we have booked meeting room 23 from 9 a.m. to 10 a.m. for your meeting today." The mobile app guides him to the meeting room and also prompts for his colleague's location. A soon as he finishes the meeting, he is assigned a seat, where he adjusts the temperature and lighting according to his preferences, and works on a critical client proposal to the best of his abilities.

> Digital workplace leaders need to introspect and decide which experience they would like employees to have, and take a piecemeal approach toward that. A single solution might not meet the needs of all the use cases, but being able to integrate them wherever required will render a seamless experience.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Create a Catalog of Activity-Based Spaces in the Digital Workplace to Improve the Employee Experience"

"Designing a Digital Workplace That Works the Way You Do"

"Indoor Location-Sensing Technologies Enable New Contextual Experiences, 4Q17 Update"

"Business Benefits of the Internet of Things: A Gartner Trend Insight Report"

"Crafting Workspaces That Enhance the Employee Experience"

"Market Guide for Integrated Workplace Management Systems"

"Market Guide for Resource Scheduling Applications"

Evidence

[1] **2017 Gartner Digital Workplace Survey:** Results are based on a Gartner consumer study conducted to understand digital workers (including changes and trends in their sentiments and expectations), explore worker engagement and examine workers' satisfaction with applications provided by their organizations. The survey was conducted online from February to March 2017, with 3,120 respondents in the U.S., Europe and Asia/Pacific. Participants were screened for full-time employment by organizations with 100 or more employees, and had to use digital technology for work purposes. Respondents' ages ranged from 18 years to 74 years. Quotas and weightings were applied for age, gender, region and income, so that the results were representative of countries' working populations.

[2] "Are Smart Buildings Smart for Business?" JLL.

[3] "Smart Office Buildings: What Features Do People Really Want?" WORKTECH Academy.

[4] "Green Proving Ground: Smart Temperature Control Optimizes Comfort and Saves Energy." GSA.

[5] "Green Office Environments Linked With Higher Cognitive Function Scores." Harvard T.H. Chan School of Public Health.

[6] "Parks Associates: 13% of U.S. Broadband Households Owned a Smart Thermostat at the End of 2017." PR Newswire.

[7] "Why Agility? Why Now?" CBRE.

[8] "A $31 Million Problem: The Hunt for the Right Spot to Work." Gartner Real Estate Leadership Council.

[9] "Predicts 2018: Digital Workplace Programs to Boost Digital Dexterity"

[10] "Optimising the Smart Office: A Marriage of Technology and People." ZDNet.

[11] "Invest Implications: 'Forecast: Wearable Electronic Devices, Worldwide, 2017'"

[12] "4 in 10 U.S. Office Workers Waste 60 Minutes Every Week Searching for Desks, Conference Rooms, Colleagues." MARGINALIA.

[13] "Daily Telegraph Installs Workplace Monitors On Journalists' Desks." BuzzFeed News.

Note 1 The Direct Correlation Between Employee Engagement and Business Performance

Evidence shows that greater employee engagement leads to greater business performance:

- CEB High Performance Survey — Making employees strong enterprise contributors can lead to a 12% increase in profit.

- Highly engaged business units achieve a 10% increase in customer ratings and a 20% increase in sales, and result in 21% greater profitability (see "The Right Culture: Not Just About Employee Satisfaction." Gallup).

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