



The smart workspace

Smart spaces breed wellness in the workplace by
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Working in a comfortable environment makes employees tangibly more effective, healthier and happier. It's a win-win for the employer where investing 35 euros per employee per year in building automation helps bringing close to 6000 euros per employee per year benefit to companies. Smart spaces in the office can deliver individual benefits to each and every member of staff.

It is undeniable that attitudes and patterns of work are changing. Employees are progressively less motivated by salaries and more concerned about the job itself and the working environment. Factors

like health and wellness are more attractive than stress and cash. Whilst the option of working from home is a major bonus, smart workspaces will bring similar benefits when working in the office.

With close to half the UK workforce working remotely – and up to 90 percent wishing to work remotely at least part-time – there is ample opportunity to save costs by downsizing head office facilities. But spending time in the office is still important. This brings the challenge of allocating the reduced space, and tailoring spaces to the dynamic needs of employees. Even though many employees choose to work from home – at least some of the time – a great workplace still attracts new

staff and improves retention.

It therefore comes as no surprise that leading companies are investing to create comfortable (and creative) environments for their employees, including building automation systems that monitor and control key parameters such as temperature, humidity, air quality and light levels. With the cost of building automation for smart buildings around 35 euros per person per year, it's a major outlay, but the benefits are huge: estimated at nearly 6000 euros per person annually (Harvard Business School, 2017).

Technology trends like Big Data & Artificial Intelligence, Building Information Modelling (BIM), Power over Ethernet (PoE) and Wireless,

Batteryless controls are changing the way we build and operate workplaces. Tomorrow's offices will not only work as smart buildings but go further and create smart spaces: from meeting rooms and conference suites, right down to restrooms and individual workstations.

Sensors help to optimise working environments

This requires exact data from every

room or area of the building, for example, intelligent lighting control can be used to modulate illumination levels over the course of the day. Controlling the colour temperature offers an additional method to adjust lighting in tune with body clocks. The necessary data comes primarily from sensors which are the key to building automation and IoT applications.

Wireless solutions are essential to ensure data is made easily

available in existing workplaces as well as new buildings. The cost, disruption and environmental issues involved in routing new cables and replacing batteries are extremely high. That's why energy harvesting-based, wireless sensors have become the choice for the building and data service community. If such sensors are combined with a building automation (gateway) and moved to the cloud, raw data can be accessed from anywhere. This sensor-driven, real-time connection between real locations and their digital twin helps to analyse and improve workplace situations. Integration of a wide range of components is simplified by leveraging the extensive interoperability offered by industry organisations like the EnOcean Alliance.

Smart spaces

Efficient and effective use of space is vital given the cost of today's new office buildings. With digitalisation, a wireless and maintenance-free solution is a very smart approach when it comes to retrofitting existing buildings. According to Florian Schiebl, Chief Operating Officer of Thing-it: "Sensors deliver hard facts that help determine and understand changes in work patterns around the clock. This makes it possible to quickly modify the room strategy to lower real estate costs and provide an ideal workspace for different teams and situations." Sensor-based knowledge further helps bring operating processes in line with demand. For example, cleaning and maintenance processes become more flexible, adapting to occupation levels and uses of the space.

Maintenance-free self-powered wireless sensors and actuators are installed with minimal effort and provide their room data to local control systems and/or self-learning, cloud-based AI devices via a smart gateway virtually and in real time. This digitalisation platform provides a central, flexible and hardware-independent control system for smart spaces.

Live data is key

Intelligent linking of existing or retrofitted building technology with a self-learning control platform in the cloud offers the greatest potential





for operating existing properties, where lighting, temperature and air quality can be automatically adapted to the specific room bookings and on-demand use.

Success with IoT-based scenarios

Smart spaces with live data and wireless communications can be applied to a broad range of areas in the workplace, such as:

Restrooms: sensors on soap dispensers determines the fill level and send an automatic notification to the janitorial staff as soon as the threshold value is exceeded. This allows the soap to be refilled as needed and increases user satisfaction. Door contact sensor determines how often the restrooms are used and prompts staff to clean the room as needed according to the same pattern when a threshold value is exceeded.

Conference rooms: Energy usage in conference rooms as well as cleaning and maintenance depending on how often they are booked and used. Motion sensors with a special algorithm installed in the room, supply the necessary data. The networked devices in the conference room can also be controlled via an app on a tablet or a smartphone, based on pre-programmed scenarios.

For example, the projector automatically starts up in "Presentation" mode while the blinds are lowered. The lighting is also adapted to the scenarios, switching the lights on if the room is being used for a meeting or turning them off and lowering the window blinds for presentations. Heating or cooling in unused conference rooms is minimized and can be reactivated a few minutes before the next room booking.

Analysis in the cloud

All raw data supplied by the sensors and actuators can be used locally but now can also be combined in the cloud and made usable via a software solution, thus enabling in-depth analysis of ways to further optimise services and increase efficiency. In other application scenarios, sensors can, for example, detect whether proactive maintenance of technical equipment is necessary.

In addition to the solutions described, service providers can also manage conference rooms, room bookings or building security via the new smart services. This also includes optimising the management of parking spaces in office car parks based on sensor data.

Sensors help make building spaces smarter and services more user oriented. Resources can thus be better planned and used, which saves time and money. Additionally, this type of service provision ensures higher employee satisfaction by increasing the quality of service and, at the same time, helping to preserve the value of the real estate.

As well as technology companies such as Microsoft, IBM, NTT Communications, Tencent and Softbank, many other business are also offering IoT solutions for smart buildings based on interoperable EnOcean radio standards. Traditional building automation providers have also added data analysis and cloud services to their standard offerings. It isn't just the energy harvesting aspect driving this success. The large, multi-vendor, interoperable product ecosystem and ease of installation and operation are also helping to fuel this growth. The future looks bright for smart spaces based on intelligence gathered by wireless, battery-free sensors and acted on by low-impact controls.

For further information please visit www.enocean-alliance.org