EnOcean Self-powered IoT

CASE STUDY

Beringar Uses EnOcean's SmartServer[™] IoT to Integrate its LoRaWAN Multi-Sensor Platform with Clients' Building Management Systems (BMS)

Active building intelligence dynamically responds to occupant patterns and maximizes operational efficiencies



Beringar is a 'platform-as-a-service' company that designs and develops high-performance multi-sensors and outcome-based building intelligence software for the commercial real estate sector. Its clients – corporate occupiers, landlords and facilities managers – find themselves in a changing environment as new technologies and the move to hybrid work models mean building use patterns change more frequently, and greater flexibility is required. Clients are also increasingly committed to meeting sustainability goals and their ESG targets. All of this means that commercial real estate must be more dynamic, efficient and effective.

The Challenge

Beringar is helping clients respond to this challenge with a solution that starts with its HX2 multi-sensor. Each HX2 tracks 15 separate datapoints in real time including occupancy, air quality, CO2, humidity, vibration, noise, sound levels and light content. These multi-sensor devices connect

to the Beringar Cloud where machine learning algorithms transform the data into meaningful and actionable insights. As the sensors track occupancy data alongside other sensor readings, customers can understand the impact people are having on the environment of the building, and they can leverage this data to make decisions that lead to greater efficiencies and cost savings.

Beringar's sensor devices communicate via LoRaWAN[®] technology. With a range of up to 2km even in harsh environments, this means fewer devices are needed to cover a given area. The standard also features high network capacity and scalability, low power consumption, security and a growing ecosystem of technologies around it.



Beringar's HX2 multi-sensor

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Beringar knew that its clients not only needed easy access to real-time data and insights; they needed to be able to respond to those insights by adjusting their building's systems. To make this possible, Beringar needed to extend its sensor dataset into customers' building management systems (BMS). However, it can be extremely challenging to integrate a new technology like LoRaWAN with a building's infrastructure which has evolved over several generations of communication technologies. The technology behind a BMS is often so complex that building owners don't want to touch it for fear of breaking something.

Since intelligent BMS is a must-have for its clients to meet their goals, Beringar needed a straightforward way to integrate its sensor platform with customers' BMS.

The Solution

Beringar chose the SmartServer[™] IoT from EnOcean to address the challenge. SmartServer IoT provides a common data layer and services that enable control and automation to seamlessly and securely integrate new IoT technologies like LoRa with legacy building automation protocols such as such as BACnet, LON, and Modbus. SmartServer IoT presents data to a BMS in a way that it can understand and incorporate it to control any number of building systems like HVAC, access control and lighting.

Beringar worked with the EnOcean software team to create an initial requirements specification, and over a few days they implemented a small-scale pilot which they were able to quickly scale to a building level. The team stress-tested the SmartServer IoT, defining the number of sensor devices that it could handle per unit, resulting in 100 devices per SmartServer, with 10 datapoints per device. According to Mark Sorsa-Leslie, Co-Founder, Beringar, "It was highly accelerated development and the support from EnOcean was second to none."



In the integrated solution architecture, the Beringar sensors and other local devices feed into the SmartServer IoT where a common data fabric called the IoT Access Protocol (IAP) abstracts the datapoints and creates virtual BACnet devices for the BMS to ingest. With this normalised view of data, Beringar's algorithms can quickly and easily make sense of the data to drive intelligent decisions that can be implemented in a building's systems via the BMS.

The Result

Using the Beringar solution integrated with their BMS, building owners can make meaningful changes to the way a building operates using higher resolution data than ever before. They can respond quickly to optimise building operations by only operating plant and equipment when it is truly needed and reducing the cost of their operating budget.

Beringar has numerous live implementations live including a pilot project within the National Health Service (NHS) estate focused on testing the use of high-resolution building sensor data to optimise BMS operation.

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Several commercial office pilots are also underway.



In one project, the air in a customer's conference room is set to change 8.5 times per hour to accommodate its 14-person occupancy limit. However, the conference room is rarely at capacity. When the BMS knows there are only two people in the room, it can reduce the frequency of air changes, saving energy while still achieving optimal air quality.



Another office customer found that its employees were increasingly tired and less productive after a company-wide fire drill. The Beringar sensors detected elevated CO2 levels, and the integrated system was able to pinpoint the cause: a fault in a mechanical ventilation unit which didn't restart properly after the drill.

These are just a few examples of the incremental changes that building owners can implement that altogether can result in a significant impact to operational efficiencies and the bottom line.

In each of these instances, the SmartServer IoT aggregates data from hundreds of LoRaWAN sensors and other operational and building systems, then normalizes the data so it can be presented to Beringar's clients in the form of dashboards the company customizes for each unique use case.

The technology inside the SmartServer IoT that enables this is EnOcean' IoT Access Protocol[™] (IAP), an open, standard technology that allows data abstraction, messaging and controls services and defines APIs via MQTT and REST protocols. It enables creation of local or remote applications and dashboards that provision, manage, monitor and control field IoT sensors and devices.



Examples of Beringar's customizable dashboards.

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Our sensor technology enables organisations to get a new level of visibility over their built environments and make data-driven decisions that will enable them to more effectively reduce carbon emissions and enhance good ESG outcomes. By partnering with EnOcean, data from our sensors will seamlessly feed

into a building management system, which aids the real time deliverability of carbon emission reduction.



David Walker CRO Beringar

Learn More



Learn more about the SmartServer IoT.

View a webinar on The Case for an Open IoT 'Data Fabric' for Smart Buildings Integration.

Contact us for a demo.

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