



IoT Conference 2023

Sustainable Smart Spaces

Optimizing Buildings using
Battery-Free IoT using the EnOcean
Standard IEC/ISO 14543-3-10/11

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EnOcean Alliance, Chairman & CEO



4th July 2023



What percentage of the global CO2 emissions is generated by buildings?

*Buildings Use
40% of our Energy
Requirements*

*Optimized Energy
Savings Require
Sensor Data*

Flexibility

And did you know that we can easily change this with innovative IoT (“Smart Spaces”) solutions?

The number of governments and businesses pledging to reach net zero, or carbon neutrality, has been growing steadily in recent years.

According to the UN, more than 70 countries, 1,200 companies, 1,000 cities, 1,000 educational institutions and 400 financial institutions have set net zero goals, and that number continues to rise.

Source: Harbor Research Sept 2022

The Problem

60% to 70% of office space is utilized – potentially less with hybrid working popularity growth

Why pay for 100%?

One working space / desk costs almost 9.000 Euros per year (rent, energy, furniture, maintenance)



The Solution

Save 25% to 40 % of the costs for rent, energy, furniture and maintenance.

EnOcean sensors monitor the occupancy of your office – desks, chairs, conference rooms etc.

The sensors reliably detect which workstations are currently being used by employees and which ones are still available.

Over 50% of companies are currently contemplating shared desks



What does bad air quality and drinking 2 glasses of wine have in common?

15% better employee productivity and 15% less absenteeism in perfect working environment

What are the Use Cases of Smart Spaces?

The current top 5 use cases for Smart Spaces are:

1. Office Space Optimization

Sensors provide data showing occupancy of areas, rooms or even individual desks or chairs enabling 25-40 % savings in office space required.



2. Digital Restroom Management

Sensors provide data to enable on-demand cleaning, disinfecting and stocking of restrooms. They show real-time availability of facilities and any alarm situations.

3. Employee Productivity (Health & Wellness)

Sensors monitor and control key parameters (e.g. air quality, lighting, temperature, humidity & occupancy levels), leading to up to 15 % increased productivity and 15 % less absenteeism.



4. People Counting

Sensors provide the real-time data required to monitor occupancy levels in offices, conference rooms, retail spaces, etc. for space/energy optimization or on-demand services. They can also monitor people counting to ensure no over-occupancy and lack of social distancing.

5. Energy Monitoring and Savings

Sensors monitor occupancy and key parameters such as temperature, window status and lighting and control these according to actual demand, helping to save up to 30 % energy.



User Benefits

Construction Time & Costs

- > savings up to 15% in new builds,
80% in retrofits

Health & Wellness

- > 15% employee motivation & productivity
increase

Space Optimization

- > 25% to 40% less space & running costs

Energy & CO₂ Savings

- > 30% typical in commercial environment

Sustainability

- > maintenance free for decades



EnOcean – Powered by Energy Harvesting

The EnOcean Wireless Standard (ISO/IEC 14543-3-1X) is geared to wireless sensors with ultra-low power consumption and energy harvesting to draw energy from their surroundings – e.g. from motion, light or temperature differences.

This principle enables maintenance-free electronic control systems.

The EnOcean Wireless Standard in sub 1GHz is optimized for use in buildings, as a radio range of 30m indoors is possible.

Millions of Building Projects since 2001

868
MHz

Europe, China

902
MHz

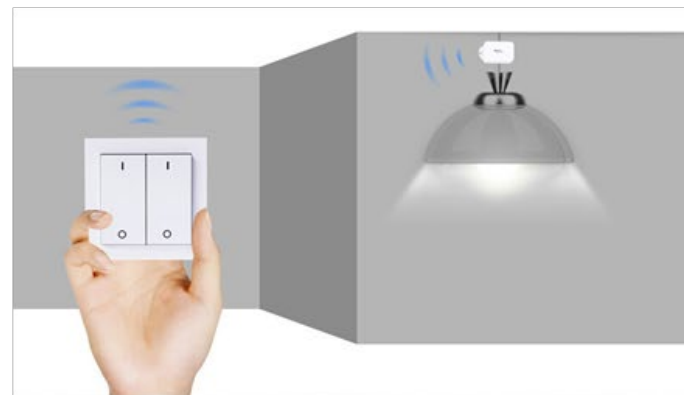
North America

928
MHz

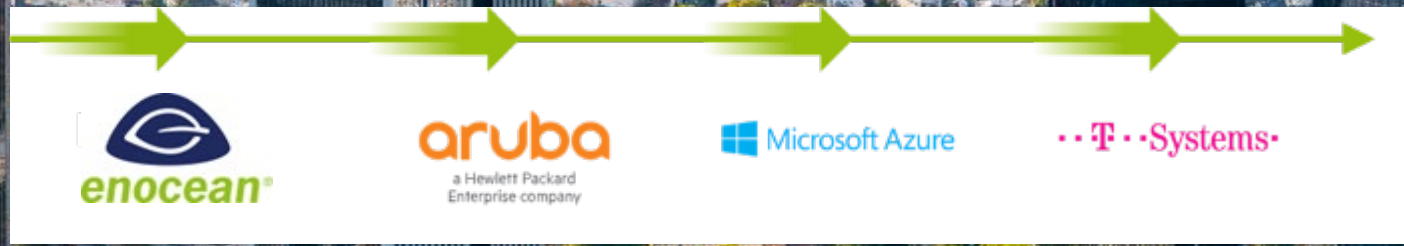
Japan

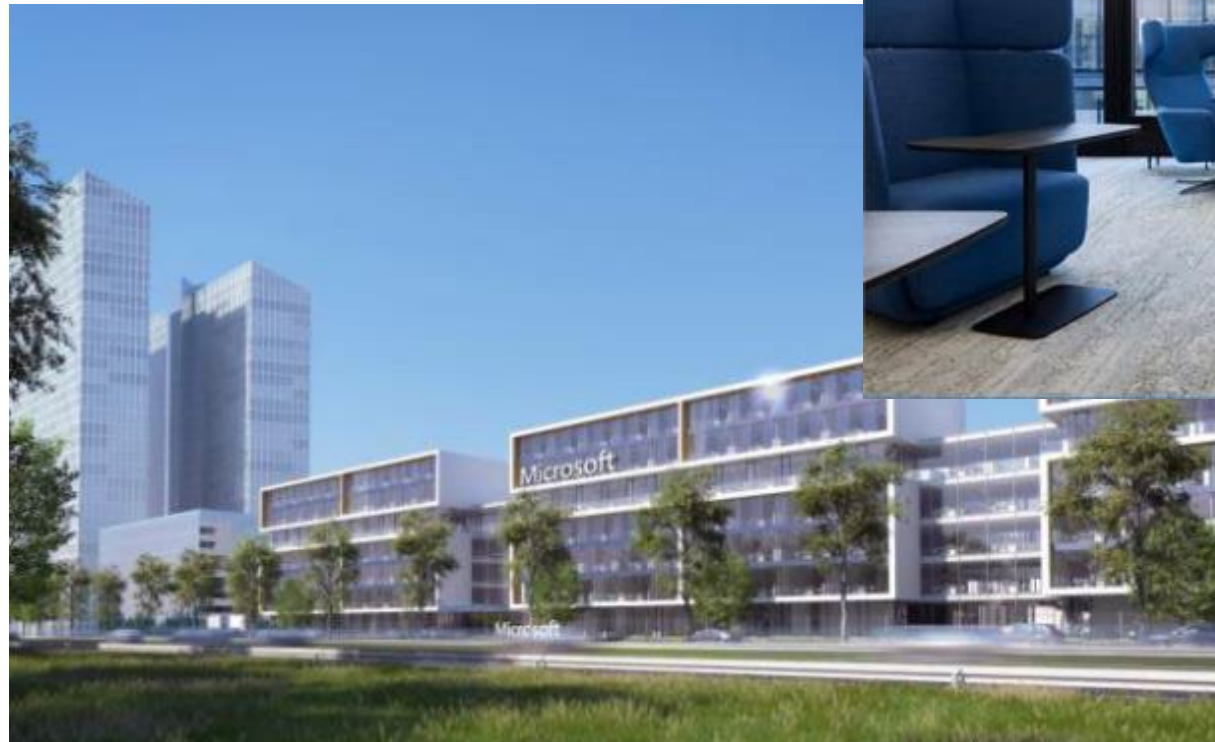
maintenance-free

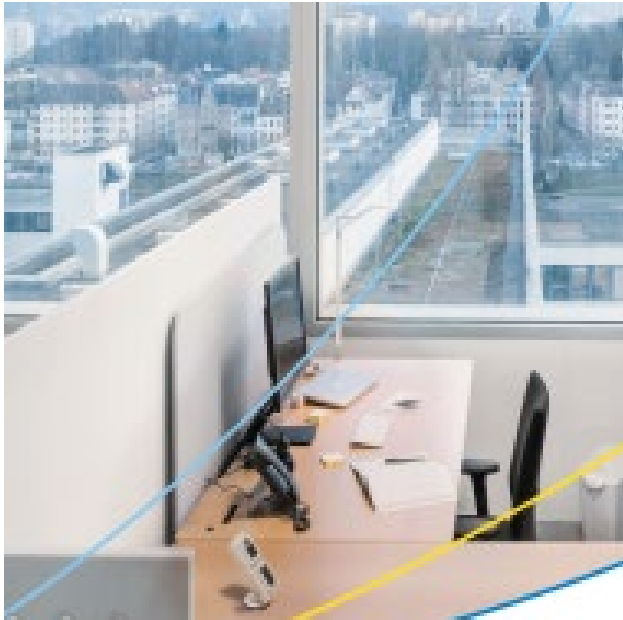
interoperable



Thousands of Energy Harvesting Based Sensors



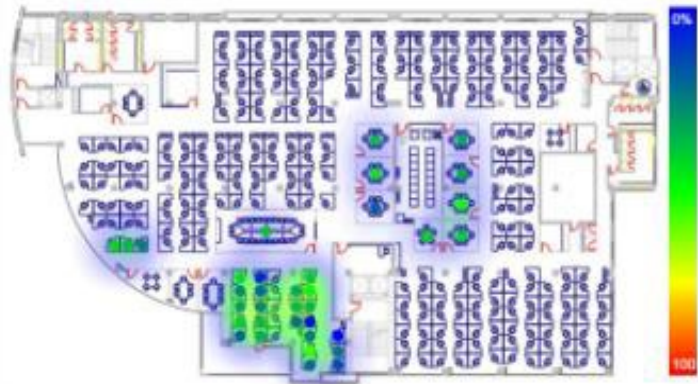




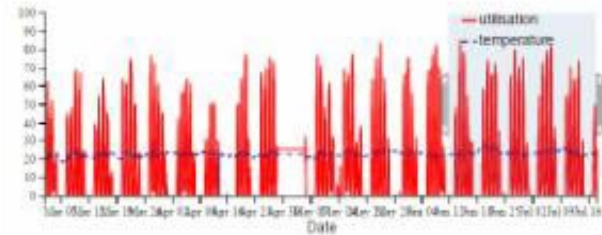


Occupancy Viewer Live View Historical

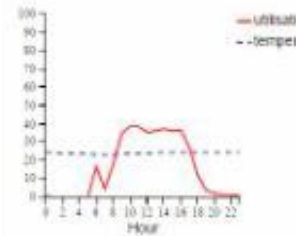
GrandAvenue, Floor2



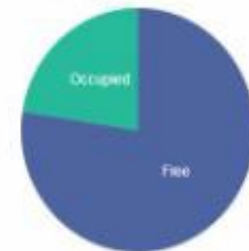
History



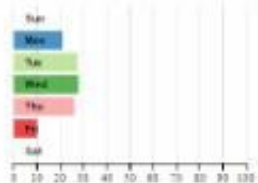
Day profile



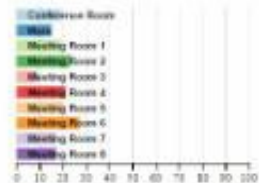
Utilisation



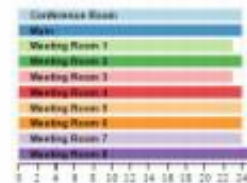
Utilisation by Day



Utilisation by Room



Temperature by Room



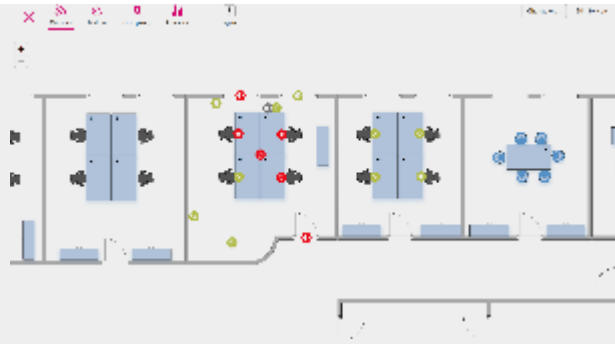
IBM
Watson IoT.

APLEONA



Humidity
Last Value: 55 %
Last Update Time: 18/09/2018 08:45

Live status



Space utilization

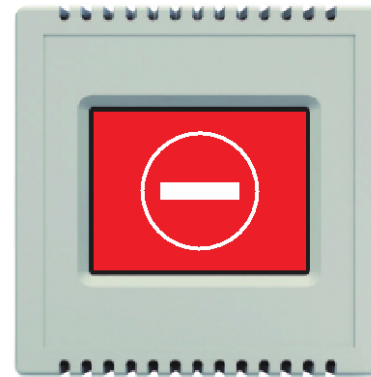


Space analysis



Heat map





The EnOcean Alliance

The EnOcean Alliance is an international association of leading companies in the building and IT industries founded in 2008. The open, non-profit organization is committed to enabling and promoting interoperable eco-systems for Smart Homes, Smart Buildings and Smart Spaces based on the maintenance-free radio standard (ISO/IEC 14543-3-10/11).



A Vibrant Eco-System for Smart Homes, Smart Buildings and Smart Spaces

PROMOTERS	PARTICIPANTS									
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										

... and over 200 Associate Members