



## **Lynred and GreenWaves collaborate on new Occupancy Management Reference Platform for people counting sensors**

**Open source reference design for workspace management will enable equipment makers to quickly bring to market sensors that collect accurate occupancy data bringing differentiation in their service platforms**

**GreenWaves will demonstrate wireless occupancy management module at Embedded World, February 25 – 27, 2020, in Nuremberg (DE), booth 3A/3A-536**

**Veurey-Voroize and Grenoble, France, February 25, 2020** – Lynred, a global leader in designing and manufacturing high-quality infrared technologies for aerospace, defense and commercial markets, and GreenWaves Technologies, a fabless semiconductor startup, designing disruptive ultra-low power embedded solutions for image, sound, radar and vibration AI processing in sensing devices, today announce their collaboration on a new open source Occupancy Management Reference Platform. This platform is intended for the connected buildings market, primarily for managing and optimizing workspace in offices.

Real estate overhead is reportedly a company's second largest cost due to the impact of building shortages and the rising price per square meter. Yet, building occupation rates are not optimized, with as much as 40% of spaces left underutilized, according to a 2015 [CBRE Workplace Strategy survey](#).

Lynred and GreenWaves are making an evaluation board available with an open source implementation of the design and the algorithm. The board runs on a single AA battery and can be used to evaluate the performance of the reference platform.

"What's new in this reference platform is that the people counting and detection function is enabled by an embedded neural network running on the GreenWaves GAP8 processor. Sample training data is obtained using Lynred's high-resolution 80x80 IR detector, ThermEye, which captures several thousand thermal images in office spaces from meeting rooms to open-plan areas," said Cyrille Trouilleau, smart buildings manager at Lynred. "This IR detector brings great advantages in reliability by enabling the reference platform to accurately count the number of people within a 25m<sup>2</sup> – 30m<sup>2</sup> surface area, while preserving occupant anonymity."

The reference platform was developed by combining Lynred's low-power consumption infrared (IR) sensors/imagers with GreenWaves' GAP8 IoT Application Processor, an ultra-low power MCU class device that enables artificial intelligence in small battery powered sensors at the very edge of the network. The reference platform lets building equipment suppliers to fast-track production of their own battery operated, easy to install people counting devices. It offers occupancy management service companies the next level in data accuracy for locating and counting people, enabling differentiation in their service platforms. All of the hardware and software components of the reference platform are released under permissive open source licenses.

"Combining the ultra-low-power inference capabilities of GAP8 with Lynred's IR sensor has helped us to produce a unique solution for building occupancy management sensors," said Martin Croome, vice president of marketing for GreenWaves. "Releasing all the design

elements under permissive open source licenses allows sensor manufacturers to take our design and add their own innovations increasing their product differentiation while minimizing production risk and cost.”

The Occupancy Management Reference Platform consists of hardware, software and algorithms for people detection using infrared technology. Unlike other visible or 3D technologies, infrared ensures the anonymity of occupants in office spaces; whether assessing desk occupancy or counting people in a meeting room.

Lynred brought its leading industrial design and manufacturing capabilities in IR technologies to the collaboration. GreenWaves provided expertise in machine learning algorithms and the necessary tools to automatically generate extremely energy efficient implementations on its GAP8 IoT Application Processor.

GreenWaves will demonstrate the prototype Occupancy Management Reference Platform at [Embedded World](#), booth 3A/3A-536, taking place February 25 – 27, 2020, in Nuremburg, Germany. The exhibition, which specializes in electronic systems, distributed intelligence, the internet of things and solutions for future themes such as e-mobility and energy efficiency, hosts roughly 1,100 exhibitors and welcomes over 30,000 visitors annually.

### **About GreenWaves Technologies**

GreenWaves Technologies, a fabless semiconductor company, designs disruptive ultra-low power embedded solutions for interpreting rich data sources such as images, sounds, radar signatures and vibrations using AI and signal processing in highly power-constrained devices. Founded in 2014, GreenWaves’ mission is to revolutionize the market for intelligent sensors and next generation hearable devices. The company’s GAP IoT Application Processors deliver extreme power efficiency when evaluating state of the art deep neural network and signal processing algorithms. GreenWaves’ GAP8 and GAP9 are the industry’s first ultra-low power, fully programmable processors for embedding intelligence into devices operating at the very edge of the network. The company is headquartered in Grenoble, France.

[www.greenwaves-technologies.com](http://www.greenwaves-technologies.com)

### **About Lynred**

Lynred and its US-based subsidiary Lynred USA are global leaders in designing and manufacturing high quality infrared technologies for aerospace, defense and commercial markets. Lynred, a recent merger between Sofradir and ULIS, has a vast portfolio of infrared detectors that covers the entire electromagnetic spectrum from near to very far infrared. The Group’s products are at the center of multiple military programs and applications. Its IR detectors are the key component of many top brands in commercial thermal imaging equipment sold across Europe, Asia and North America. The organization is the leading European manufacturer for IR detectors deployed in space.

[www.lynred.com](http://www.lynred.com)

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