EC's New Products Introduction Journal Issue 2/2026

The New Products Journal

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The Purpose of the Journal is to introduce the new products, solutions, and technologies that have been designed and developed in the Engineering City.

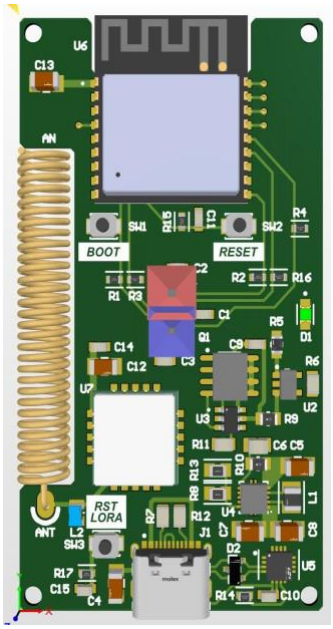
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. Distributed Occupancy Intelligence Platform – *by Arevion Smart Solutions*

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The Distributed Occupancy Intelligence Platform is a distributed people occupancy monitoring and analytics system for buildings and infrastructure facilities without the use of cameras or collection of personal data.



Who can benefit from our product, and why does a business need this data?

Modern infrastructure facilities handle large flows of people every day, while accurate information about visitor counts, traffic distribution over time, and real-time occupancy levels has become critically important for efficient resource management, safety, and operational cost optimization. In most cases, such data is either completely unavailable or collected in a fragmented way that does not provide a real-time overview of ongoing activity. Distributed occupancy monitoring systems make it possible to analyze people flows, identify overloaded zones and peak periods, forecast occupancy trends, and make decisions based on objective real-time data. The ability to obtain this analytics without

using cameras or collecting personal data is especially important for facilities with strict privacy and information security requirements.

For public transportation systems, passenger flow analytics provides insight into the actual load of the transport network across different time intervals and routes. Installing occupancy modules at entrances and exits of buses, metro cars, trolleybuses, and other vehicles allows automatic detection of boarding and exiting passengers, identification of peak hours, and analysis of low-demand periods. Based on this data, transport operators can distribute vehicles more efficiently, optimize schedules and routes, and reduce operational costs without compromising service quality.

In educational institutions, occupancy monitoring systems enable real-time control of the actual utilization of schools, universities, classrooms, and individual building zones. Attendance analytics helps optimize space usage, manage student flows between buildings, and monitor occupancy limits in crowded areas. Additionally, the system can improve safety by providing accurate information about the number of people inside a facility during emergencies or evacuation scenarios.

For hospitals and medical facilities, occupancy control is important both for safety and for optimizing internal operational processes. Analysis of patient and visitor flows helps identify overloaded departments, improve staff allocation, and reduce congestion in waiting areas. Under increased sanitary and privacy requirements, the ability to monitor occupancy without video surveillance or collection of personal data becomes especially valuable, significantly simplifying deployment within healthcare infrastructure.

System Architecture

The system consists of compact autonomous edge modules installed at entrances, exits, and control points throughout a facility. Each module is equipped with an 8×8 multizone ToF sensor, onboard data processing, local memory, and wireless communication interfaces including WiFi and LoRa.

The modules operate as a distributed self-healing network, exchanging entry and exit events with each other and maintaining real-time information about the current number of people inside the facility.

The system continues operating even during partial communication failures or power outages thanks to its built-in battery backup, local event storage, and distributed architecture with no single point of failure.

All data is transmitted to a local server or control workstation, where information is stored, processed, and visualized through dedicated software.

The platform is designed for hotels, business centers, industrial facilities, smart building infrastructure, educational institutions, public transportation systems, and environments with high privacy and reliability requirements.

Key Features

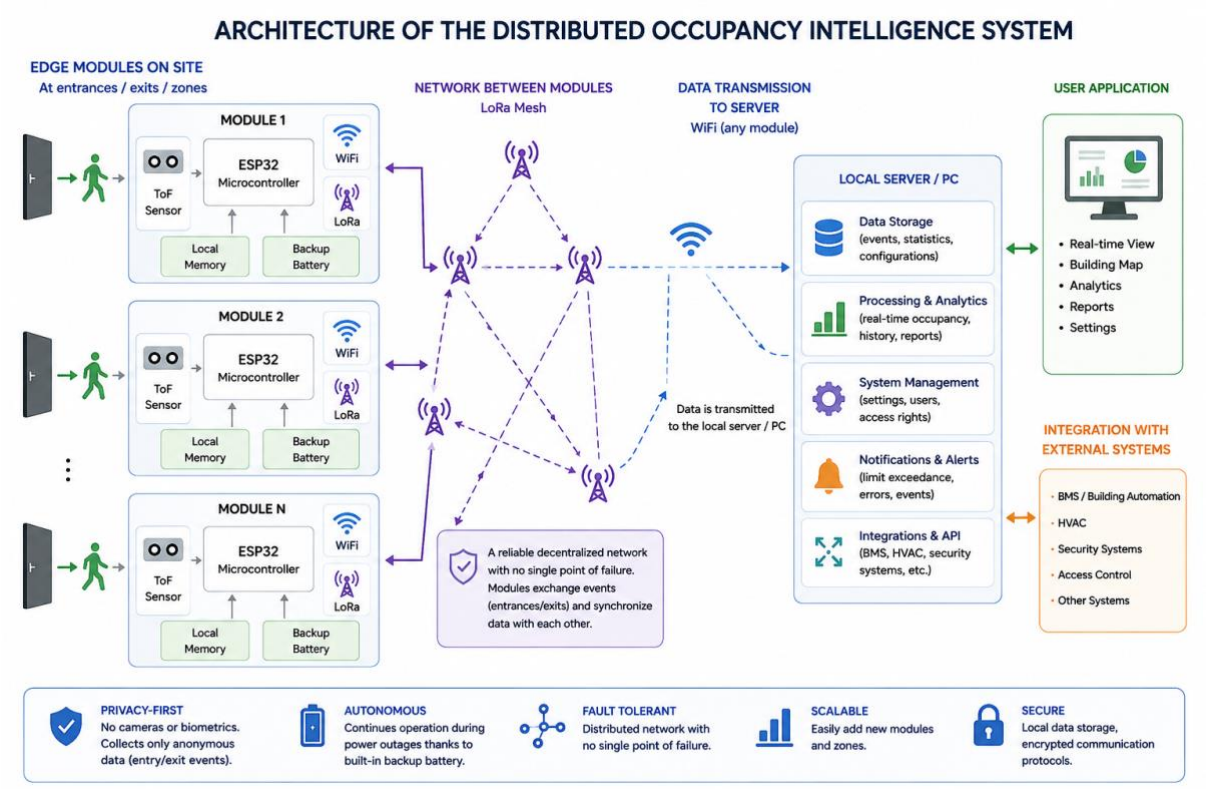
- No cameras or biometric technologies. This allows us to protect users' personal privacy;
- Privacy-safe architecture;
- Distributed edge processing;
- Autonomous operation during power outages;
- Local data storage without mandatory cloud infrastructure;
- Scalable mesh/network architecture;
- Integration with building automation systems and BMS;
- Real-time operation.

Potential Use Cases

- Occupancy analytics;
- Room capacity monitoring;

- HVAC and lighting control;
- People flow monitoring;
- Safety and evacuation systems;
- Smart building automation;
- Zone usage and attendance analytics.

The image below shows the system architecture and operating principle. Each module has a miniature enclosure. According to our preliminary estimates, the module size will be approximately 6 × 2.5 × 1.5 cm — effectively smaller than a cigarette pack. This makes hidden installation possible when required.



As part of the MVP phase, we plan to build three modules, develop the embedded firmware, and create a minimal user interface. Most likely, the first version will use a terminal-based application instead of a full graphical UI. The industrial enclosure design is also postponed for now — we will use a standard case for the prototype stage.

According to our roadmap, MVP testing should be completed by the end of June or mid-July. We want to present the product at the **Sevan Startup Summit** and potentially launch it on Kickstarter. Ideally, we would also like to introduce the solution to the **Yerevan Municipality.**

Since the launch of our startup, we have explored dozens of product concepts and completed several outsourcing projects. But throughout all of this, one core direction has remained consistent: we want to build smart IoT systems that help businesses operate more efficiently and grow faster. **And a few days ago, we took the first serious step in that direction.**

About Arevion Smart Solutions



Our mission is creating "Smart Engineering Systems, which moves your Business forward."

Our team has extensive experience in full-stack engineering and can develop a complete, production-ready product for you - from initial R&D all the way to serial manufacturing.

We develop intelligent engineering solutions that help businesses operate faster, more accurately, and more efficiently. Our team builds automation systems, smart devices, and custom electronics, turning complex challenges into reliable, functional technology.

Combining the expertise of engineers, hardware designers, and software developers, we deliver a full cycle of work - from concept and design to prototyping, programming, and final product development. Every project is built on a deep understanding of the client's needs and strict engineering standards, ensuring high quality and predictable results.

Fast, flexible, and free of unnecessary bureaucracy, we become a long-term technology partner for small and medium businesses. Whether you need automation, a custom device, or a new product brought to market, our engineering systems are designed to move your business forward.

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