# DISTRIBUTED AND CLOUD-BASED ACCESS CONTROL SYSTEM

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## RESUMEN

Researchers at the University of Alicante have developed a new-generation access control system based on Internet of Things (IoT) architecture and supported in the cloud, which allows secure and flexible management of access to physical spaces in any type of organization.

The solution offers interoperability with devices and platforms from different manufacturers, support for multiple identification technologies (cards, biometrics, mobile devices), real-time monitoring, and centralized permission management.

Its modular and open nature facilitates the incorporation of new technologies and integration with existing systems, ensuring a scalable, secure, and more cost-effective deployment compared to conventional systems.

The technology is particularly suitable for corporations, critical infrastructures, research centers, hospitals, universities, office buildings, or commercial spaces.

## VENTAJAS Y ASPECTOS INNOVADORES

### MAIN ADVANTAGES OF THE TECHNOLOGY

The technology offers the following advantages:

- Enables interoperability with **systems and devices from different manufacturers**, avoiding fragmentation and facilitating integration into existing infrastructures.
- Supports **multiple identification technologies** (RFID, NFC, biometrics, mobile devices) and allows new technologies to be added without modifying the architecture.
- Centralized cloud-based management updates **permissions in real time**, reducing the need for manual intervention at each access point.
- Equipped with **backup batteries**, the system continues operating for at least 15 minutes after a power outage, ensuring operational continuity.
- Its **modular and open** design **reduces** deployment and maintenance **costs** compared to closed proprietary solutions.
- Provides **real-time access data**, improving security and enabling efficient statistical analysis and audits.
- Integrates with **ERP and human resources management systems**, facilitating synchronization of access permissions and attendance records.
- Devices operate in **sleep and low-power modes**, optimizing energy consumption and extending battery life.

### INNOVATIVE ASPECTS

The system combines an **open and modular IoT architecture** integrating motorized opening devices, local and remote control, and a local

database that allows offline operation.

It supports **multiple identification modes** (card, tag, biometric, mobile app with PIN) and communication via RFID, NFC, Bluetooth, Wi-Fi, and Wi-Fi Direct, enabling interoperability with equipment from different manufacturers.

The solution includes **backup batteries, time synchronization, and fault management**, and allows remote updates and the integration of new technologies without reconfiguring the infrastructure.

This **flexibility**, **enhanced security**, and **real-time monitoring** capability clearly differentiate the technology from traditional access control systems.

## APLICACIONES DE LA OFERTA

The access control system is applicable to work environments of any type and size, regardless of the number of employees or controlled areas.

It is therefore of interest to construction and architecture companies seeking to incorporate this type of technology into their building solutions, as well as for use in companies, office buildings, commercial spaces, or public administration facilities, such as those in education, healthcare, or critical infrastructure environments.

## COLABORACIÓN BUSCADA

The researchers are seeking companies interested in acquiring this technology for commercial exploitation through licensing agreements, as well as R&D project development agreements (technical cooperation) to undertake projects related to the technology.