



## Solution:

## Permanent Inventory for Assets

Asset Management in Supermarkets

BLE / LoRa / LoRaWAN / Cellular / Wi-Fi / Ethernet

## Benefits and Function

### The Challenge of Inventory Management in Retail

**Regulatory Requirements and Economic Necessity:** Large retail chains with hundreds or thousands of branches face a dual challenge: On the one hand, they must carry out legally required physical inventories at least every three years. On the other hand, their shareholders need precise inventory information for well-founded business decisions.

**Personnel and Financial Burden:** Performing these inventories requires specialized personnel. Since regular sales staff are usually not sufficiently qualified for this complex task, external inventory teams are hired – a significant cost factor.

**Complex Asset Management:** The dynamic environment of retail further complicates inventory management:

- Cross-branch transfers of assets (operating resources)
- Returns after the end of leasing
- Disposals of defective devices
- Other location changes

The often inadequate documentation of these movements leads to incorrect cost allocations in accounting, which distorts the profitability analysis of individual locations and makes overall management of the company more difficult.

This complex initial situation highlights the need for an efficient, automated solution for asset tracking in retail.

### Innovative Inventory Solution with Beacon Technology

The automated inventory solution combines smart radio technology with central data processing:

#### System components and function:

- Long-lasting beacons (battery life >10 years) are attached to all assets (baking machines, freezers, etc.)
- Each beacon is assigned to a specific asset number in the central database
- Beacons regularly send a unique ID via radio signal
- Strategically placed scanners in the markets receive these signals

ENAIKOON servers process all data (IDs, timestamps, market ID) and provide it for:

- Direct queries
- SAP integration

This system enables fully automatic, **permanent inventory without manual effort.**

### From NFC to Beacons - A Lesson from Practice

A leading supermarket chain initially attempted to inventory its assets (inventory items) using NFC technology. The dimensions of the project were considerable:

- Several thousand branches
- 100 - 150 assets per market
- Over 1 million assets to be recorded

Despite significant investments and a project duration of over 10 years, the NFC-based approach failed at the basic implementation stage:

the complete equipping of the assets with NFC tags could not be realized. Consequently, a reliable physical inventory with high data quality was not feasible.

The migration to beacon technology for permanent inventory offers decisive advantages here:

- Significantly **reduced process complexity**
- Automated recording **without manual scanning**
- **Continuous inventory monitoring instead of selective inventories**

### System Advantages of Beacon-Based Inventory

#### Economic Advantages

- No personnel and travel costs for manual inventories
- Rapid amortization of investment costs
- Autonomous operation without ongoing personnel deployment

#### Operational Improvements

- Instant inventory reports available at the touch of a button
- Automatic detection and logging of asset transfers between branches
- Immediate detection of assets that are no longer present
- Precise real-time localization of all assets

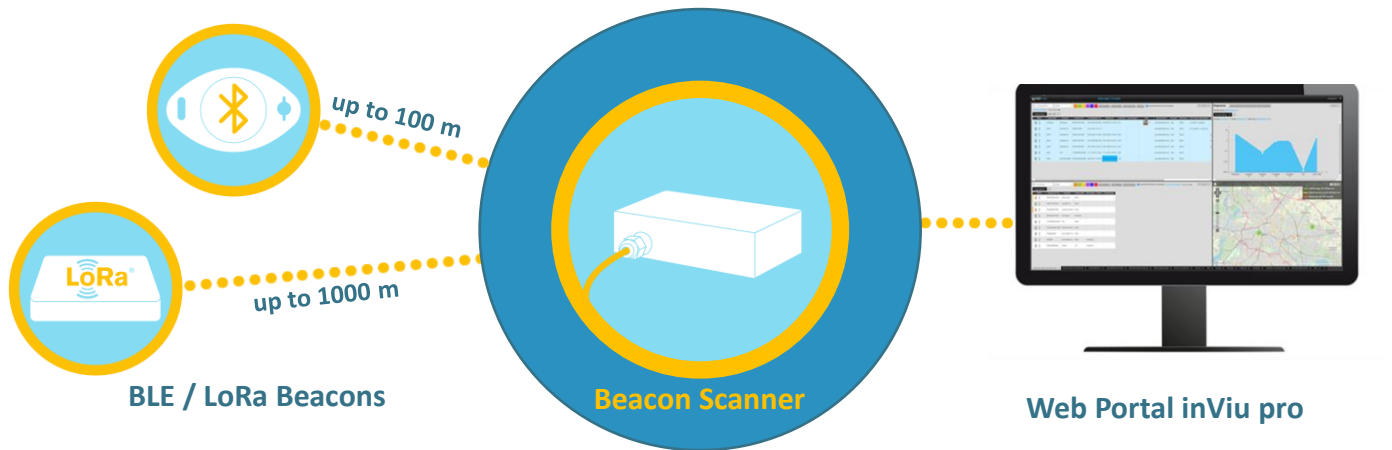
#### Quality Improvement

- Elimination of human error in inventory recording
- Continuous, automated inventory monitoring
- Reliable data basis for management and controlling

#### Process Optimization

- Fully automatic operation after implementation
- No manual follow-up required
- Efficient asset management without active personnel deployment

These advantages lead to a **significant increase in efficiency** with simultaneous cost reduction and improved data quality.



## Permanent Inventory for Supermarkets - Technical Details

### Beacons

The beacons regularly send their own, globally **unique ID** via radio.

In the web portal, each beacon is assigned to an asset once. Thus, the respective asset can be identified at any time with the help of the beacon ID.

There are two types of beacons available:

- Beacons with a range of approx. 100 meters:  
These are **BLE beacons**, e.g. the iBeacon AirTag with Bluetooth radio technology.  
A battery change is only required every 5+ years.
- Beacons with a range of 1000+ meters:  
These are LoRa beacons. Their range is significantly greater than the range of BLE beacons, but on the other hand they are somewhat more expensive.  
The battery life is comparable to the iBeacons.

BLE beacons are available in great variety on the market. We buy these types of beacons and make sure that they work well with the beacon scanner.

We also buy the LoRa beacons; however, the selection here is rather small.

### Beacon scanner

The **ENAIKOON beacon scanner** can receive the pings of both beacon types. We have developed the hardware and software of this IIoT device ourselves and optimized it for permanent inventory in supermarkets.

The beacon scanner stores a list of the received beacon IDs and transmits them at regular intervals via **Cellular, Ethernet, Wi-Fi or LoraWAN** to the ENAIKOON servers.

The beacon scanner requires an external power source if it is to be operated without interruption.

Since Ethernet with PoE is often available in supermarkets, the beacon scanners have, among other things, the option of **simultaneously supplying the device with power and internet**. This significantly reduces the installation effort.

### Data forwarding

In most cases, the data should not be managed in a new program system. Rather, the data from the **permanent inventory** should be transferred to the existing **fixed asset accounting system**.

Therefore, ENAIKOON has equipped the permanent inventory solution with **interfaces**, including to **SAP**.

The master data of the fixed asset accounting can thus be automatically transferred from SAP to the ENAIKOON servers.

And conversely, the current data of the permanent inventory can be transferred to SAP at any time intervals.

Important reports in this context are:

- **Where is which asset right now:**  
Market / Warehouse / Timestamp / Device class
- **Who is responsible for which asset:**  
uninterrupted **chain of responsibility** – at any time a specific employee is responsible for each part
- **Which cost center** is assigned to which asset
- **Optimization of the stock of assets; no unwanted hoarding of small devices by market managers**
- **Are there too many devices of one type**, so that their stock should be reduced?
- **How high is the loss of assets** per device class, per market, per manufacturer?