



Solution:

Mobile Asset Management

Machine and equipment management on construction sites

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

Benefits and Function

Application

Mobile large devices (trucks, cars, construction machines, cranes, agricultural machines, etc.) are now generally equipped with telematics units, which can be used not only to locate these vehicles and machines, but also to **monitor** them in many ways.

The situation is different with **equipment** such as drills, lamps, valuable tools, ladders, measuring devices (e.g. construction lasers), cable drums, keys, and much more.

ENAIKOOKON Mobile Asset Management was developed for the **equipment management** of this class of devices.

You would also like to know where these **small devices** are and who has them. The focus is not on the potential theft of the parts, but on their **availability**, because if a required part is not available when needed, this can make a work process more difficult or even impossible until a replacement has been procured.

And depending on the location (e.g. an offshore wind farm, a track construction site or a remote bridge, etc.), it can take a long time and be costly to procure a replacement for missing material.

Solution

Inexpensive radio modules, so-called "beacons", are attached to the small devices. These work continuously for years without a battery change.

At **regular intervals**, the beacons transmit a globally unique number (ID) via radio, so-called "pings".

These pings are received by so-called "beacon scanners", which forward the received IDs to the ENAIKOOKON servers, enriched with timestamp, GPS coordinates, etc.

The **ENAIKOOKON servers** keep all this information ready for querying the current data at any time using the **ENAIKOOKON inViu pro web platform** via any internet-enabled device.

Example

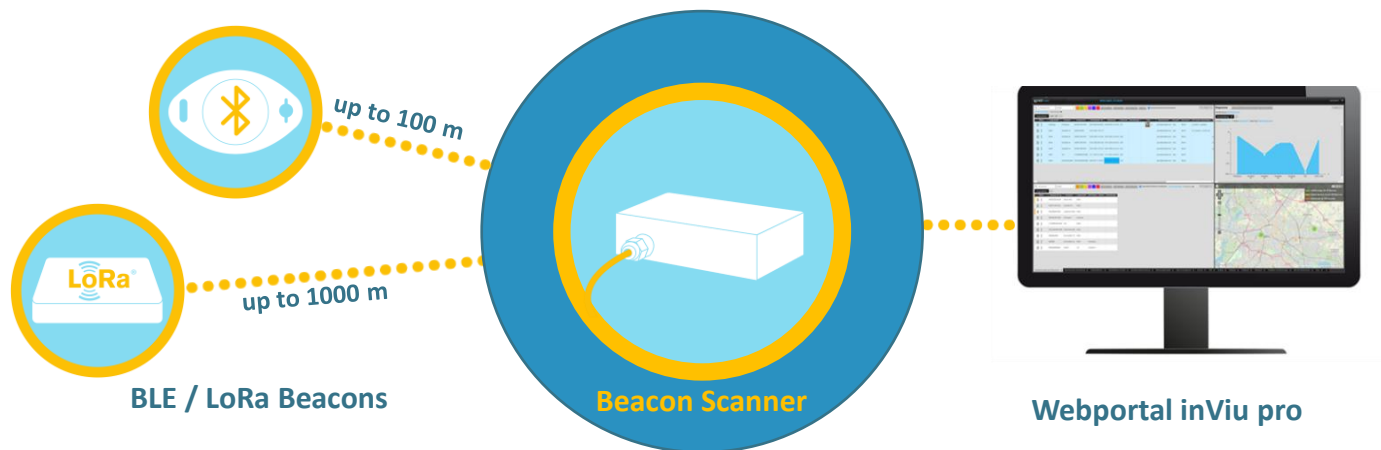
One of our customers renews coatings on ships, bridges, drilling platforms, etc. For the construction site setup, he packs containers with hundreds of required small devices, tools, etc. based on a packing list.

The following questions must be answered:

- **Before departure** to set up the construction site: are all parts required according to the packing list really in the containers?
- **On the construction site:** Are all small devices removed from the containers back in or near the container at the end of the day?
- **When the construction site is finished:** are all small devices taken along during construction site setup back with you during return transport?

Advantages

- Delays in the workflow are avoided
- **No unnecessary costs** due to missing equipment
- **No searching** for small devices and material
- After the initial setup, the system works **autonomously**, i.e. ongoing support from construction site employees is not required
- If required, the system provides **current information** so that the whereabouts of a small device or its availability can be queried at any time
- The **completeness** of a delivery of small devices can be checked with just a few mouse clicks.
- A time-consuming physical inventory can be omitted. Nevertheless, a **complete permanent inventory** is available.



Mobile Asset Management - Technical Details

Beacons

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

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

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 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 ensure 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 asset management.

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.

If a device inventory is sufficient, e.g. once a day, the beacon scanner can also be operated with batteries over a longer period of time.

inViu pro

ENAIKOON inViu pro is the web platform for **monitoring any trackables** such as cars, trucks, construction machines, containers, agricultural vehicles, cranes, small devices, animals, people and much more.

In addition to GPS tracking, the platform offers a variety of **evaluations**, e.g. logbooks, operating hours, data for preventive maintenance, temperature monitoring, tank level management and much more.

Mobile Asset Management is an integral part of the platform.

Important reports in this context are:

- **Where is which small device** currently located: GPS coordinate / construction site name / warehouse
- **Who is responsible** for which small device: complete **chain of responsibility** – at any point in time, a specific employee is responsible for each part
- Which **cost center** is assigned to which small device: Raw data for the post-calculation of a construction site
- Which small device is currently available / not available: **Optimization of the stock** of small devices; no unwanted hoarding of small devices on construction sites
- What is the **utilization rate** of a category of small devices: are there too many devices of one type, so that their stock should be reduced?
- What is the **loss** of small devices per device class, per construction site, per employee?