



Equipment and Asset Tracking in the Healthcare Sector

In a large clinic, certain medical devices such as a mobile X-ray machine can be located via indoor positioning. Visitors and patients benefit from indoor navigation. With the help of an indoor positioning system (IPS), medical devices in a clinic can be tracked, persons can be located and protected, and the freedom of movement of dementia patients can be controlled.

PROBLEM DEFINITION

A large clinic has numerous departments on several hundred thousand square meters. The departments share certain medical equipment, such as a mobile X-ray machine or ECG devices, on the one hand, and each department has its own special equipment that is to remain in the ward. If a mobile X-ray machine is needed, the staff has to call all other departments because the existing rent list is not carefully maintained. The devices that are supposed to remain in a department are also often not found, as they leave the designated area by theft or accident. Due to the complexity of the building complex, patients and new employees also have problems with orientation, the waiting areas are overcrowded. As a result, patients have to wait several hours for an appointment.

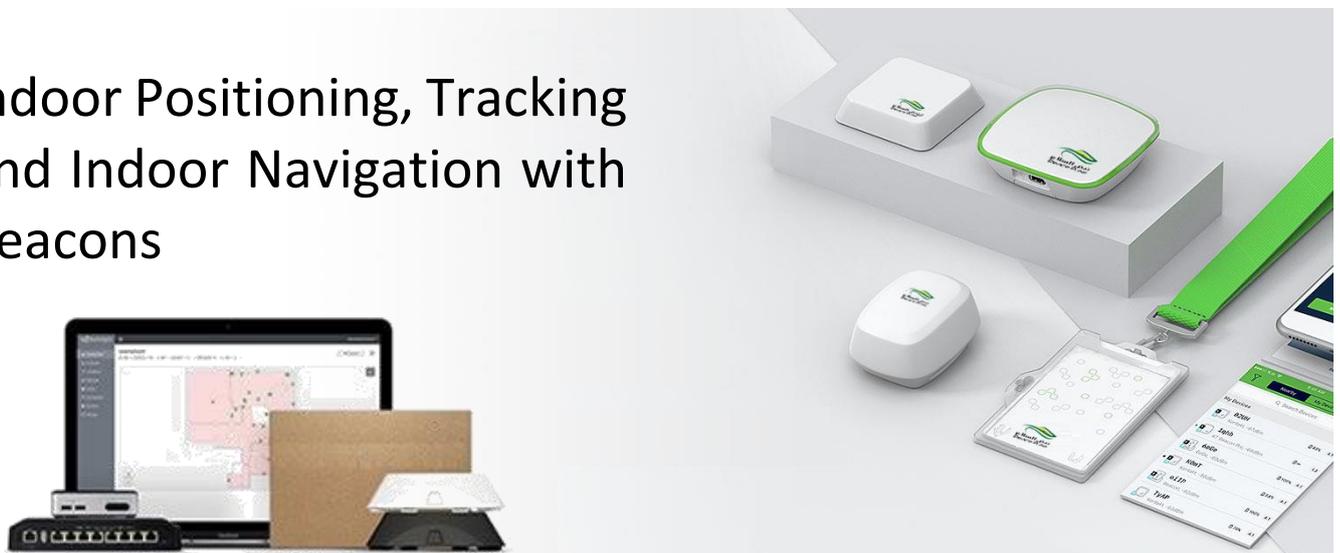


A large clinical complex has many departments. Medical equipment (such as mobile X-ray machines or ECG devices) is frequently undetectable, either because the lending list is not up-to-date or because it is stolen or has been removed from the area by mistake. Bed management is another challenge many hospitals are facing. Disposition and localization of beds are often difficult to control and plan.

Furthermore, in clinics, medical emergencies of patients or threatening situations dealing with patients with aggression potential can occur at any time. In such cases, the nurse concerned is not always able to get help quickly enough. This also applies to patients moving freely within the building, who do not always manage to make themselves noticed in emergency situations.

The care sector is concerned with another problem: Demented people are often accommodated here, who must be prevented from leaving the facility unnoticed.

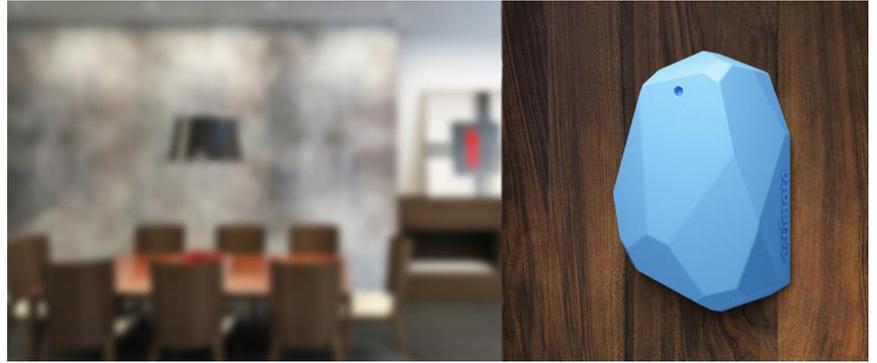
Indoor Positioning, Tracking and Indoor Navigation with Beacons



SOLUTION

The medical equipment is tracked by indoor position determination. All employees have access to the current location via app or browser application. If a device is not to leave a certain area, a message is triggered for this case.

A visitor app for the smartphone contains a clear 2D or 3D map for **indoor navigation** as well as an integrated calendar. This calendar reminds the patient of treatment appointments in good time and also takes care of the patient's route. If an appointment is postponed, he or she will receive a notification - this shortens waiting times for all parties involved.



The medical equipment and the hospital beds are tracked via indoor positioning. All employees have access to the position data via app or browser application. Information on the condition can also be registered (e.g. occupied, cleaned, damaged). If a medical device / bed should be prevented from leaving a certain area, an alarm is set for that case. Since each bed is identifiable, it can be registered at any time if a bed has been moved to a patient's room, the cleaning department or the workshop. Subtasks can be delegated to the cleaning and maintenance department.



To protect the hospital staff, employees are equipped with a Bluetooth transmitter, which can be used to trigger an alarm in emergency situations at the touch of a button. The location of the person concerned is immediately sent to colleagues and / or security personnel. This possibility of triggering a mobile emergency call can also be useful for patients moving freely within the building.

In the care sector, a tracking system ensures optimal protection and the freedom of movement of dementia patients. The patient can be denied access to certain areas by triggering an electric door lock. This also simplifies organizational processes in the facility.

PP-BIT Platform



Sensors

Bluetooth Low Energy (BLE) beacons & LoRa

Hardware

Indoor Positioning Locator Nodes

Software Tools

Indoor Navigation, Analytics, Tracking
Mobile App & Browser Portal

Indoor Navigation and Asset Tracking in a Hospital



Bluetooth Low Energy (BLE) beacons are used to locate medical devices and beds. Because it is a large area, on which relatively few objects are to be tracked, Peace Pulse - Bluetooth Indoor Tracking (PP-BIT) LoRa/BLE tags are used. These battery-powered, disinfectant-proof hardware components are attached to the objects to be tracked. Positioning takes place via the network of evenly distributed PP-BIT Locator Nodes. The Locator Nodes receive the Bluetooth signals and transmit the data to the PP-BIT Platform, where the position is calculated and provided via web services. Using an app or a browser application, employees can see the location of medical devices and hospital beds with an accuracy of less than 5 meters on a map. A device management platform can be used to assign additional attributes to the beacons (e.g. device type, inventory number, technical characteristics), which may also be searched for.

Locator Nodes in combination with beacons ensure optimal protection of personnel and patients. Clinic staff can wear a Bluetooth transmitter in the form of a watch or bracelet. If a medical emergency or a dangerous situation occurs, an alarm can be triggered by pressing a button on the beacon. In this case, the beacon immediately transmits the position data of the person concerned to the PP-BIT Locator Node. Colleagues or security personnel receive the alarm message on their smartphone or pager and can react immediately.

Dementia patients can also carry a Bluetooth beacon, which is detected by a Locator Node within range. The Locator Nodes can not only detect the beacon, but can also control doors and alarms, thus delimiting or opening certain areas. In predefined protected areas, a demented patient entering the activation area of the Locator Node triggers an action, for example an electric door lock.

A beacon management tool allows for monitoring the battery status of all Bluetooth transmitters, facilitating maintenance.



Demo Kit are available call us for arrangement