

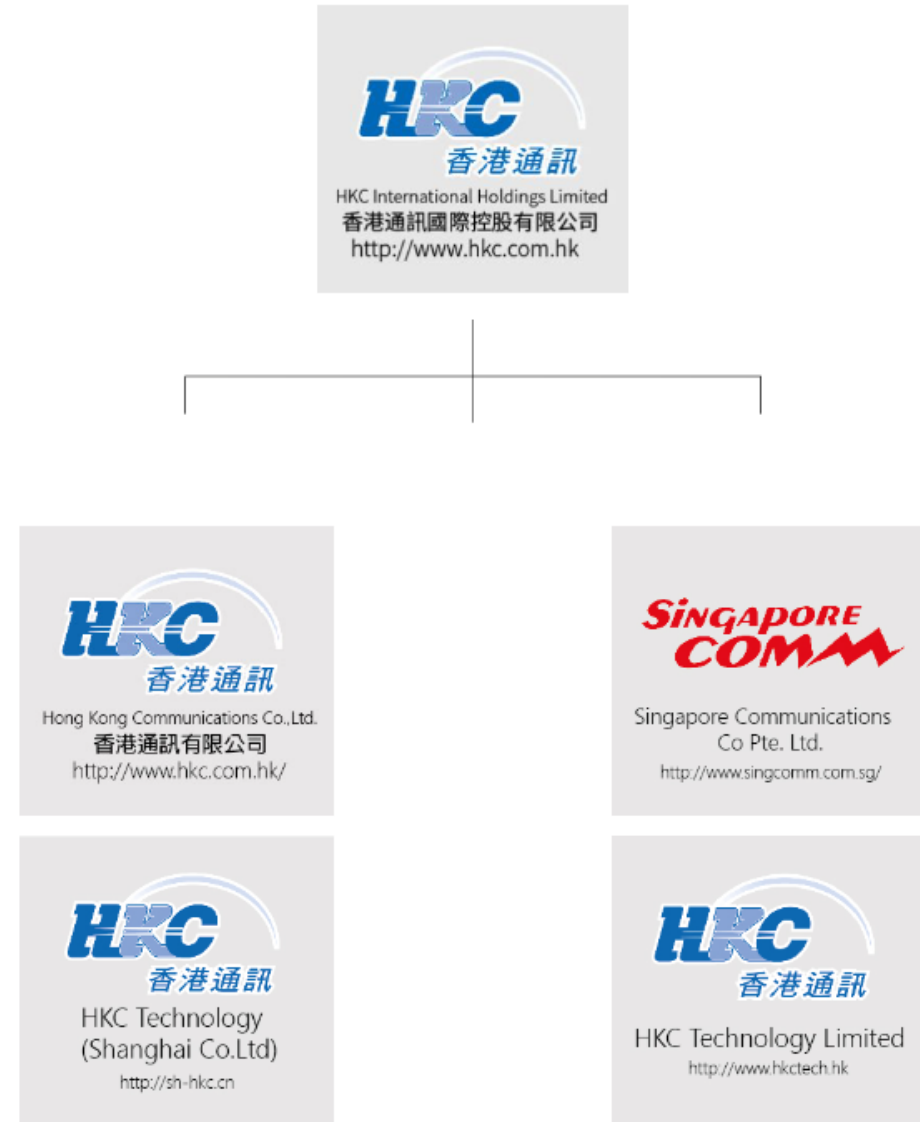
Patient Real Time Location & Tracking Solution



Hong Kong Communications Group Structure

HKC International Holdings Limited is a major Information Communication Technology (ICT) Solution Provider in Asian Pacific region. With headquarter in Hong Kong, HKC group also owns oversea branches in Mainland China and Singapore. The Group was successfully listed in The Stock Exchange of Hong Kong Limited in 2001 named as HKC international Holdings Limited (Stock Code: 248).

The Group will endeavor to deliver its expertise in providing professional ICT solutions to its customers ranging from Smart Library Solution, RFID Solutions, Health Care Solutions and AI Robotic Solutions.



Pain point of Hong Kong Public Hospitals

Statistics :

Waiting time display is capped at 8 hours amid a large number of patients waiting for a long time are being treated in the A&E Department. Patients with minor illnesses can consider seeking alternative medical services from private clinics (as listed in Primary Care Directory or Hong Kong Doctors Homepage).



Reference Link:

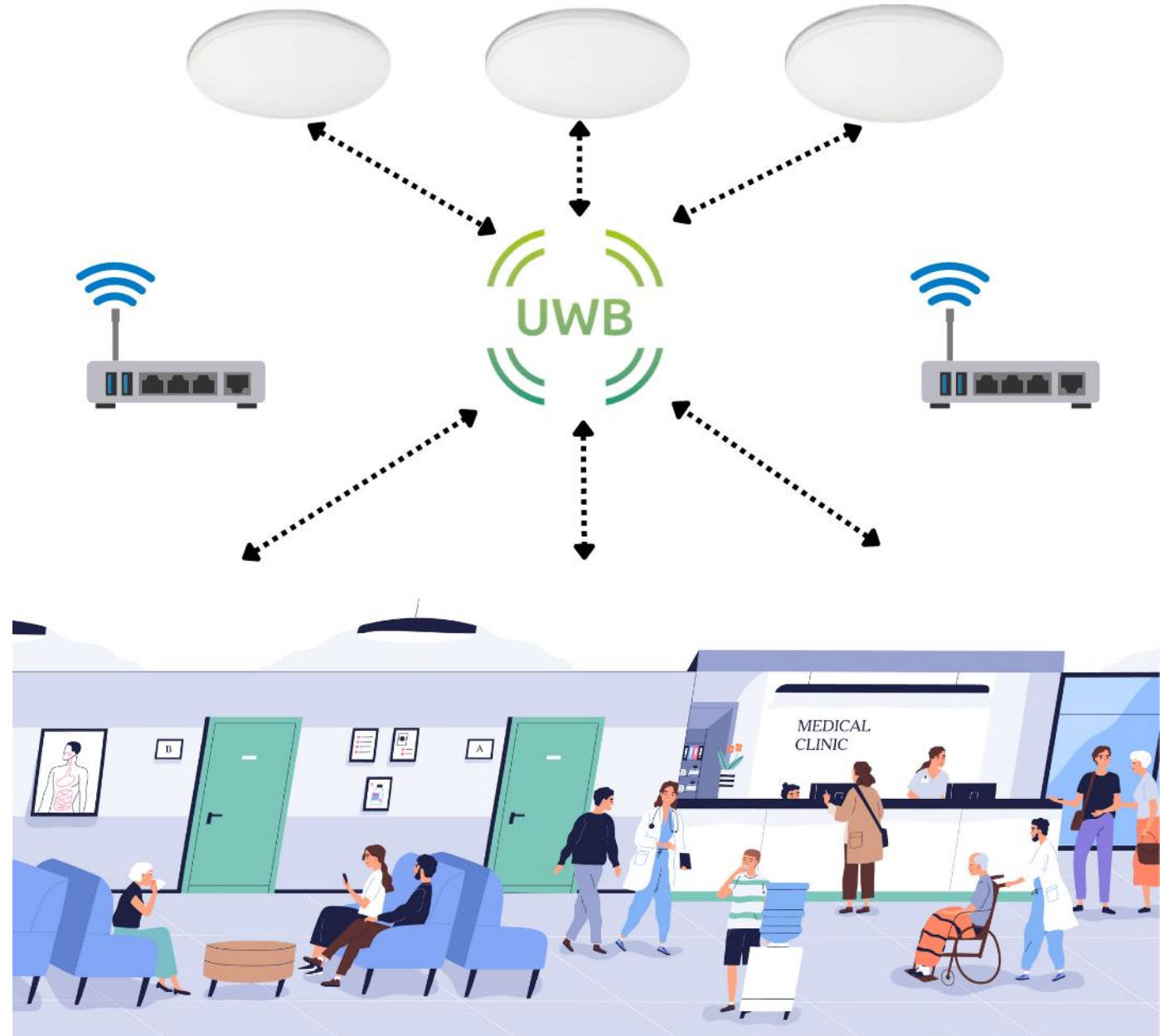
[https://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=235504&Lang=ENG#:~:text=Waiting%20time%20display%20is%20capped,or%20Hong%20Kong%20Doctors%20Homepage\).](https://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=235504&Lang=ENG#:~:text=Waiting%20time%20display%20is%20capped,or%20Hong%20Kong%20Doctors%20Homepage).)

HKC Solution 1

We provide UWB tracking system for the prevention of wandering incidents of patients in hospital waiting area.

Accomplish by

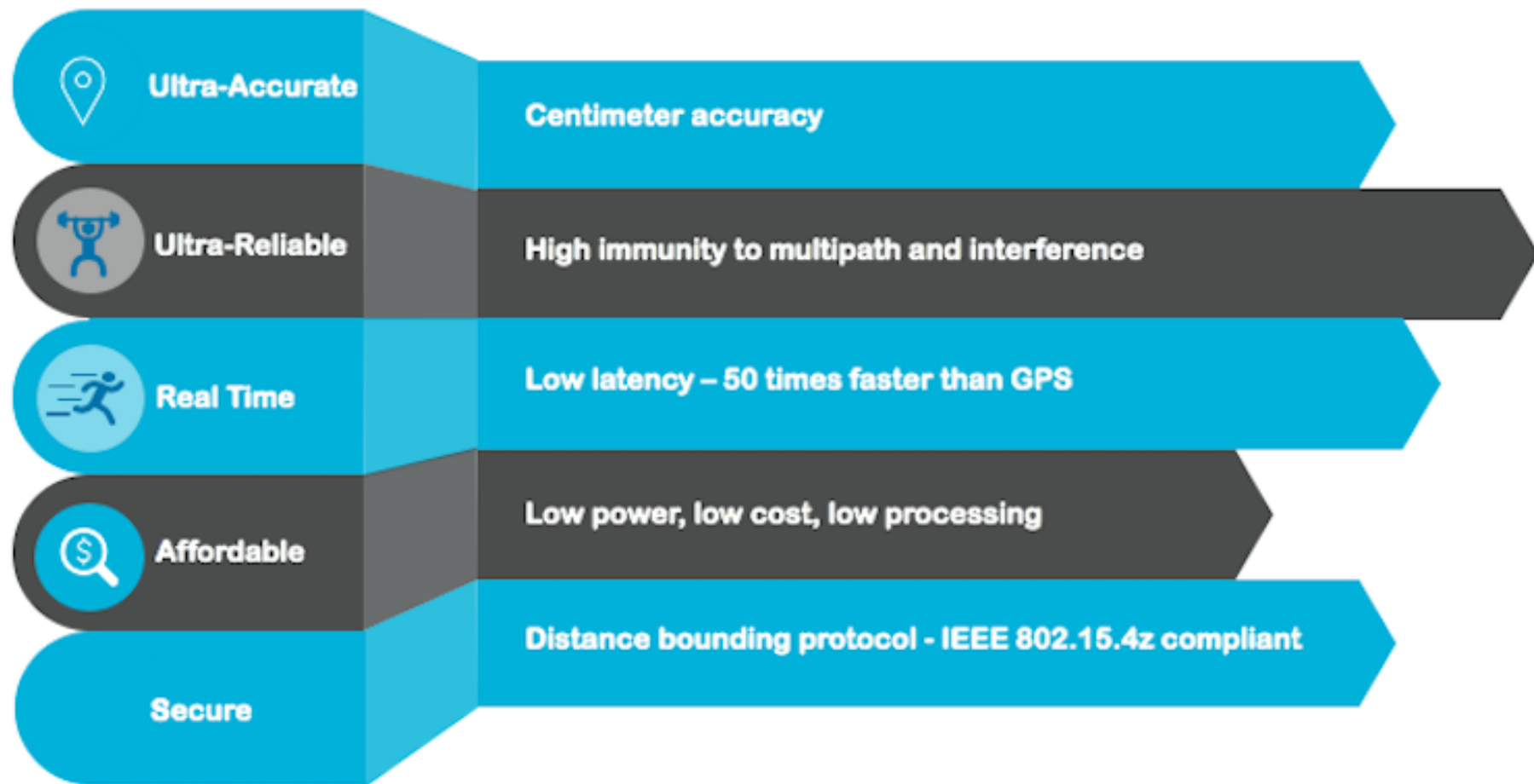
1. UWB Tag
2. Instant alarm signal received by on duty hospital officials





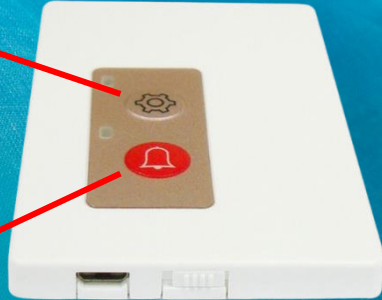
What is Ultra Wide Band?

A technology designed specifically to deliver micro-location and secure communication



Reset Button

SOS
Emergency
Button



UWB Tag



UWB Anchors

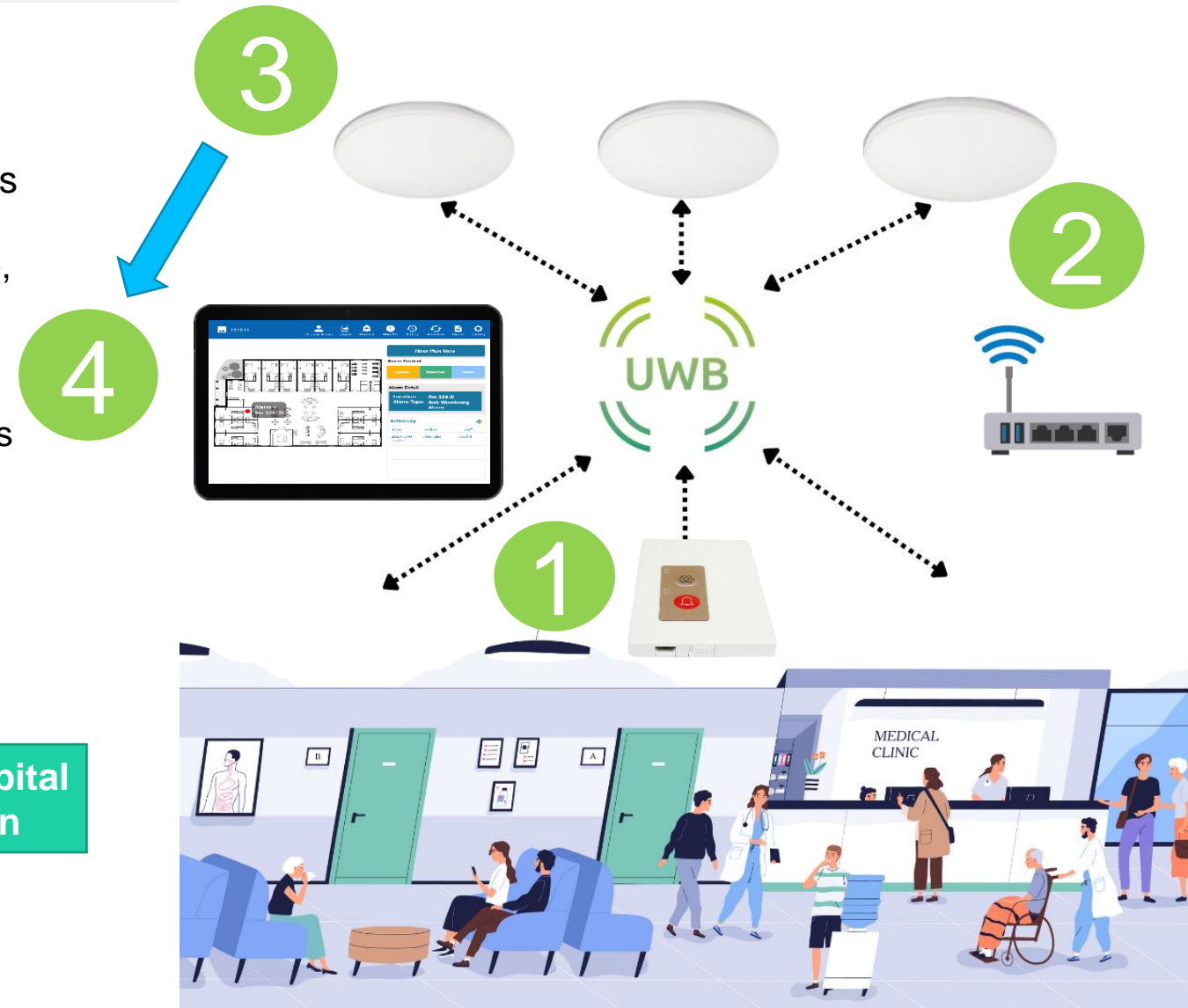
UWB anchors emit short-duration, high-frequency pulses of radio waves that can be used to measure the time of flight (ToF) of signals between the anchors and UWB tags

HKC UWB Tag and UWB Anchors (For Precise Positioning)

- High precision to centimeter level Ultra Wideband (UWB)
- 3 Anchors for accurate triangulation of position
- Long battery life. Adjustable update frequency
- Panic button built into the tag
- Programming input buttons for advance application
- Real-time Location System (RTLS) Server with powerful API and features
- Applications include contact tracing, alarm location

System Architecture

1. Patients wear UWB tags adopting the Ultra wide-band technology
2. UWB Anchors are installed on the ceiling or surrounding walls in fixed locations up to 25 meters apart. The anchors can be powered via USB or PoE (Power Over Ethernet). For example, a 10000 mAh USB battery can power the anchor for 50-60 hours or so
3. At least 3 anchors are needed for a 25×25 space. The anchors synchronize their internal clock via Ethernet cable or WiFi and then listen for pings from UWB tags
4. Once synchronized, the “Real Time Location Server” (RTLS) will calculate the tags' position based on time difference of signal arrival at the anchors (TDoA)



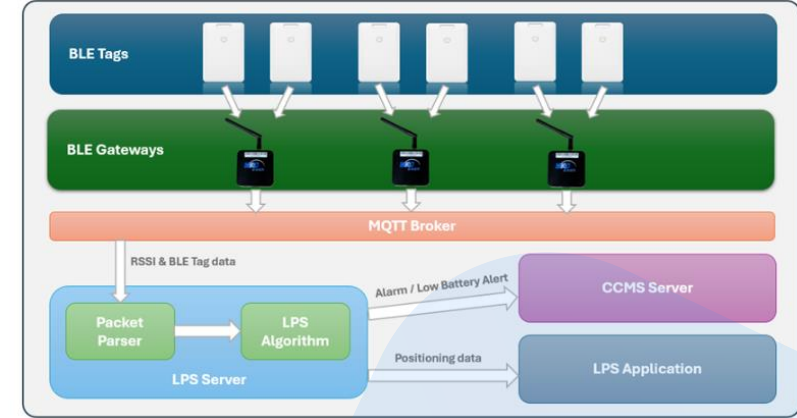
*****Emergency signals will immediate alert onsite hospital officials by APP if patients press the emergency call button**

HKC Solution 2 : BLUETOOTH PRECISE INDOOR POSITIONING SYSTEM



HKG: 248

BLUETOOTH PRECISE INDOOR POSITIONING SYSTEM



RTLS System

- BLE Tags are utilized for location tracking, emitting low-power Bluetooth identification signals every 1-2 seconds.
- BLE Gateways scan the signals emitted by BLE Tags and publish the data to the MQTT broker with a specific topic.
- The MQTT broker receives messages from publishers (BLE gateways) and routes them to the subscribers with the specific topic.

System function scope

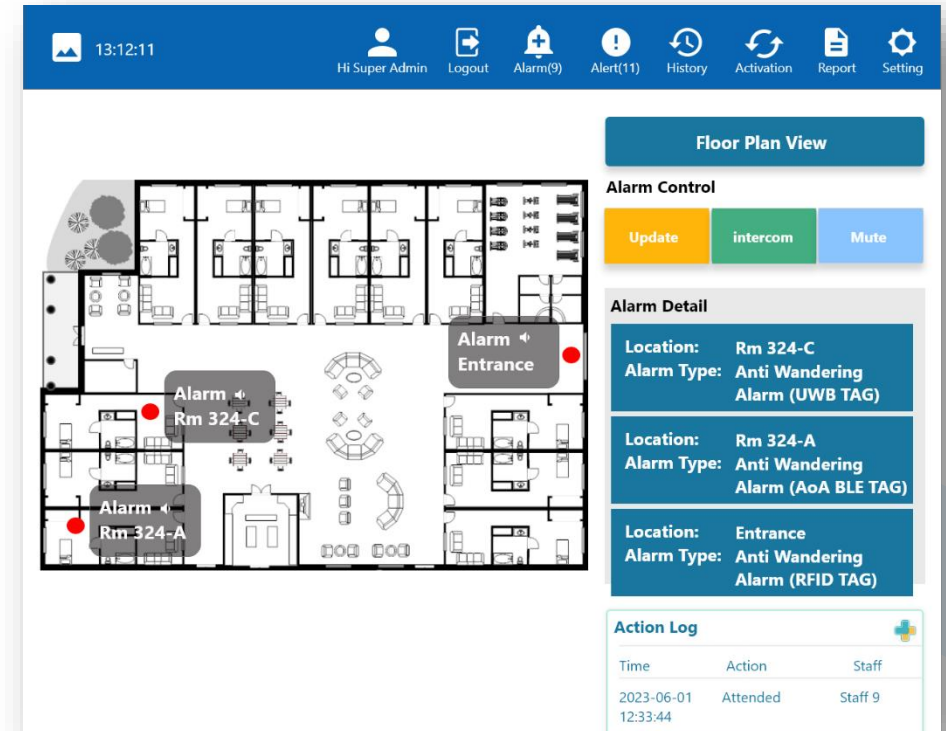
The three main functions are below.

- **Alarm Button:** The BLE tag features an emergency button that triggers an alarm in the real time location tracking system when pressed.
- **Low Battery Alert:** If the battery level of the BLE tag falls below the threshold set in the system, it will trigger a low battery alert in the UI.
- **Real Time Location Monitoring:** Compute the real-time location using RSSI data collected from the gateway and displays the location on the floor plan.



Benefits

- **High Accuracy:** Precise location tracking within centimeters.
- **Cost-Effective:** Utilizes existing Bluetooth infrastructure.
- **Low Power Consumption:** Energy-efficient for battery-operated devices.
- **Indoor Navigation:** Effective in environments where GPS is unavailable.
- **Real-Time Tracking:** Provides immediate location updates.
- **Easy Deployment:** Quick setup without extensive infrastructure changes.
- **Reliability:** Consistent performance in various environments.
- **Comprehensive Management Reports:** Detailed analytics for monitoring and decision-making.
- **Intuitive UI:** User-friendly interface for easy navigation and operation.



A relief of the shortage of
manpower of on-site officials

Remote instant emergency
alerts from PC / tablet / mobile

Easy operation by on site officials

UWB tags or wristbands are easy and
fast to wear by children and elderly

We provide on site installation and
professional after sales service



Overall Benefits & Imp

The deployment of **UWB or Bluetooth Location Tracking Solution** will improve the overall safety of public hospitals

Reference Cases



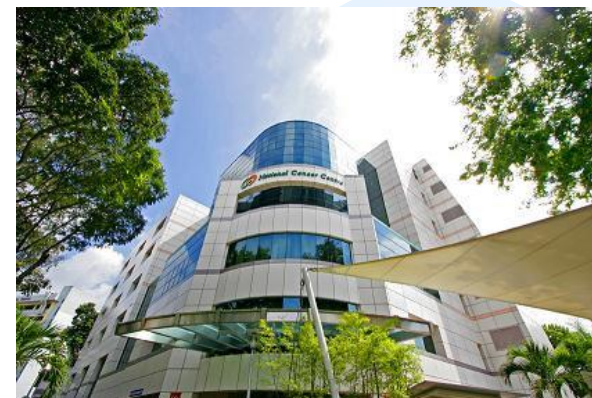
The Tanner Hill

The first non-subsidised quality elderly housing project in Hong Kong



Blissful Place

Project of the “lease-for-life” Senior Citizen Residences Scheme



National Cancer Centre Singapore

Real Time Location Tracking System

Thank you!

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