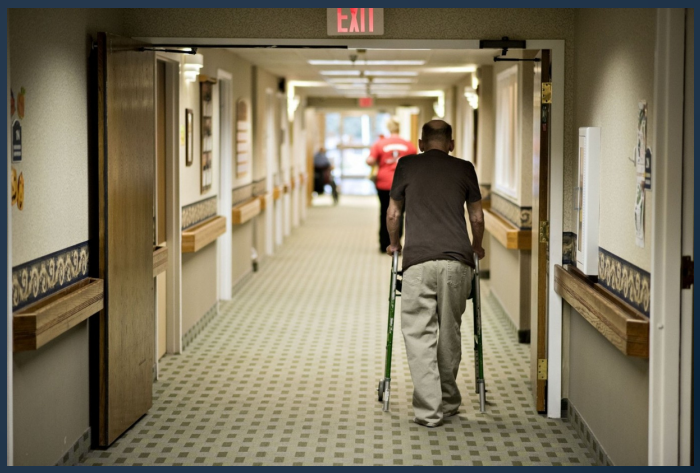
香港通訊

REAL TIME LOCATION TRACKING SOLUTION (RTLS)

Navigate the Unseen: Empower Your Space with Indoor Real-Time Location Tracking

Digital Transformation improves the quality of life



PAIN POINT OF HONG KONG ELDERLY / HEALTHCARE SERVICES

According to a local survey conducted in 2021, it was found that around 30% of people with dementia had the experience of getting lost, which was a slight increase in percentage compared to the results 14 years ago. The consequences can be fatal. Wandering can put people with dementia in danger as they may experience dehydration and starvation, be exposed to extreme weather conditions, or suffer from traffic accidents or falls.

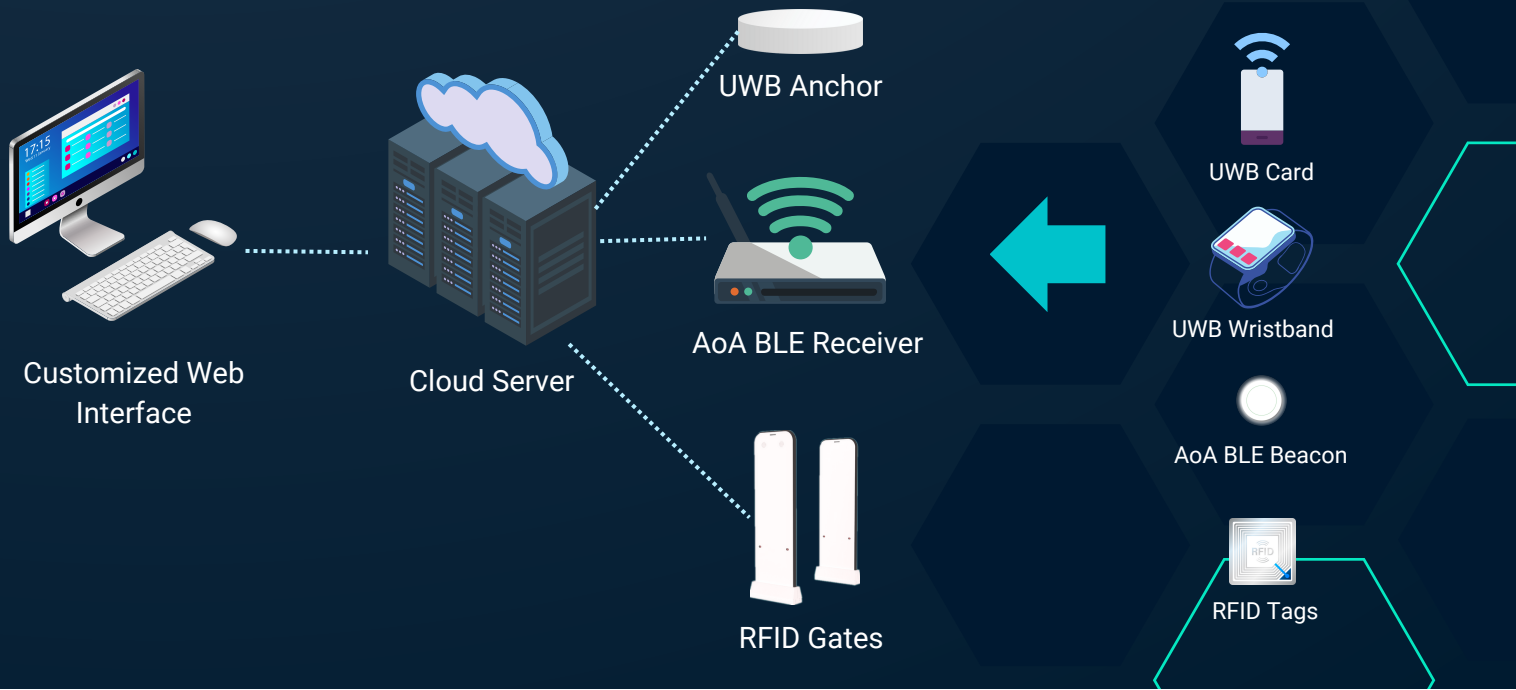
One of the pain points related to the lost or wandering problem in Hong Kong hospitals or elderly homes is the potential risk to patient or resident safety. When patients or elderly individuals wander off or get lost within the facility, they may encounter hazards such as falling, encountering restricted areas, or getting disoriented. This poses a significant challenge for staff members who need to locate and ensure the safety of these individuals promptly.

Additionally, the time and effort required to search for a lost patient or resident can divert staff members' attention from other critical tasks, impacting overall efficiency and quality of care.

Reference Link:
https://www.legco.gov.hk/research-publications/english/2022issh07-cancer-prevention-and-treatment-20220224-e.pdf

OUR CONTINUING MISSION TO MAKE A CHANGE AND IMPROVEMENT OF ELDERLY / HEALTH CARE SERVICES BY IT SOLUTION

Introducing our cutting-edge Real Time Location Tracking Solution (RTLS), where we bring together the power of UWB (Ultra-Wideband), Bluetooth AoA and RFID tracking devices to provide comprehensive monitoring capabilities.
Our platform revolutionizes real-time location tracking by seamlessly integrating UWB, Bluetooth and RFID technologies.

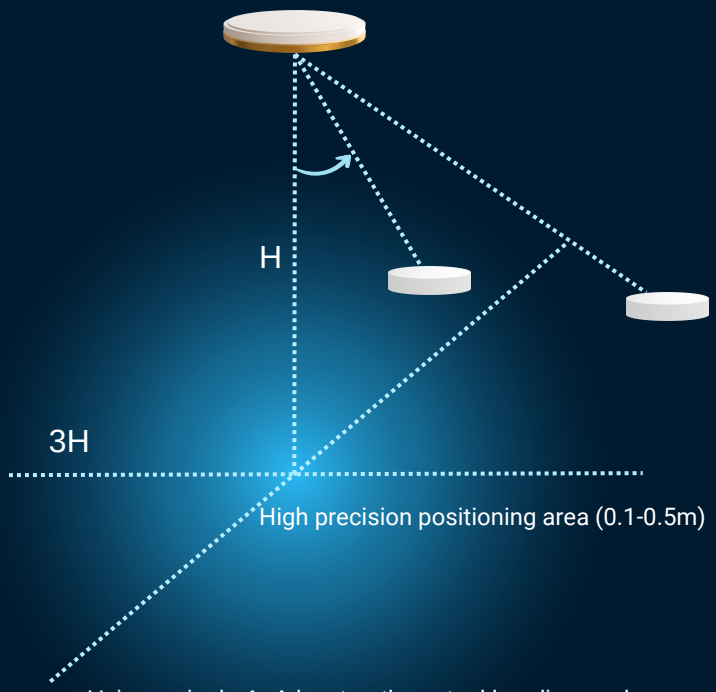


INTRODUCING BLUETOOTH AOA TECHNOLOGY

Bluetooth AoA (Angle of Arrival) technology is a feature of Bluetooth Low Energy (BLE) that enables precise location tracking by calculating the angle at which a Bluetooth signal arrives at a receiving device. It is used for accurate positioning and tracking in three-dimensional space.

In Bluetooth AoA, multiple receiving antennas are strategically placed in fixed positions, forming an antenna array. The transmitting device, equipped with a Bluetooth beacon or tag, emits signals that are received by the antenna array. By analyzing the slight differences in signal arrival times and signal strengths at each antenna, the system can accurately calculate the angle of arrival for the Bluetooth signal.

This angle information, combined with the known positions of the receiving antennas, is used to determine the location of the transmitting device.



Using a single AoA locator, the actual heading angle and pitch angle of the tag are calculated, resulting in a distinct ray. By considering the determined tag height, the AoA locator can then calculate and derive a unique absolute spatial coordinate.

BENEFITS

- Highly accurate positioning and tracking
- Precise indoor positioning
- Enhanced tracking performance
- Improved reliability in challenging environments
- Scalable solution for various applications
- Low power consumption
- Compatibility with existing Bluetooth infrastructure

BLUETOOTH AOA TECHNOLOGY HARDWARE

RTLS Anchor

The RTLS Anchor is a Bluetooth tracking device that gathers signals from RTLS tags and processes the data. Our Bluetooth location device offers both highly accurate indoor positioning services and functions as a Bluetooth AoA gateway, enabling access to various Bluetooth IoT sensor data.

Technical Specification

Operating Frequency: 2.401 GHz~2.481 GHz
Power Consumption: 2W
Power Supply: 48V PoE (IEEE 802.3af) / DC 12V
Operating Temperature: -20°C~60°C
Installation Method: Horizontal Ceiling Mount
Dimensions: 194mm * 194mm * 56.9mm
Weight: 515g (including bracket)

AoA BLE Beacon

The AoA BLE Beacon emits Bluetooth signals that contain information about its unique identifier and angle of arrival. By receiving these signals and analyzing the angle of arrival from multiple beacons, a receiver or gateway can determine the precise location of the device or asset being tracked.

Technical Specification

Operating Frequency: 2.4GHz
Service Life: 3 years or more (with 550mAh battery, normal frequency)
RF Power: 0dBm
Protection Level: IP65
Operating Temperature: 0℃~60℃
Humidity: 5%-95%
Weight: 10g
Dimensions: 50mm * 30mm * 7.9mm

BLUETOOTH AOA TECHNOLOGY HARDWARE

AoA BLE Wristband

The personnel wristband enables high-precision personnel positioning, heart rate monitoring, blood pressure monitoring and tamper alarm

The personnel wristband operates on the standard 2.4 GHz protocol and utilizes AOA (Angle of Arrival) signal positioning technology to achieve high-precision positioning within a range of 30-50cm indoors.

Technical Specification

Communication Distance: 0-50 meters
Operating Frequency: 2.4 GHz, 13.56 MHz
Positioning Accuracy: 30-50 cm
SOS Alarm: Button-triggered alarm
Battery Capacity: Rechargeable lithium battery, 340mAh
Charging Time: 2.5-3 hours
Vital Signs: Heart rate, body temperature
Sampling Interval: Once every minute (configurable)
Battery Life: 10 days
Operating Temperature: -25°C to 65°C
Humidity: 5%RH-95%RH (non-condensing)
Protection Level: IP68
Dimensions: 40mm * 36.6mm * 17.8mm (excluding wristband strap)
Weight: 60g

AoA BLE Card Type

The positioning capability of the tag is highly precise, with ranging accuracy ranging from 0.1 to 1 meter. It is designed in a card format, making it convenient to carry. It is also compatible with RFID technology, allowing it to be used for access control, consumption systems, and various other applications.

Technical Specification

Dimensions: 90mm * 60mm * 7mm
Waterproof level: IP65
Positioning accuracy: ≤1m
Communication distance: <30m
Rechargeable battery: 1000mAh

INTRODUCING UWB TRACKING TECHNOLOGY

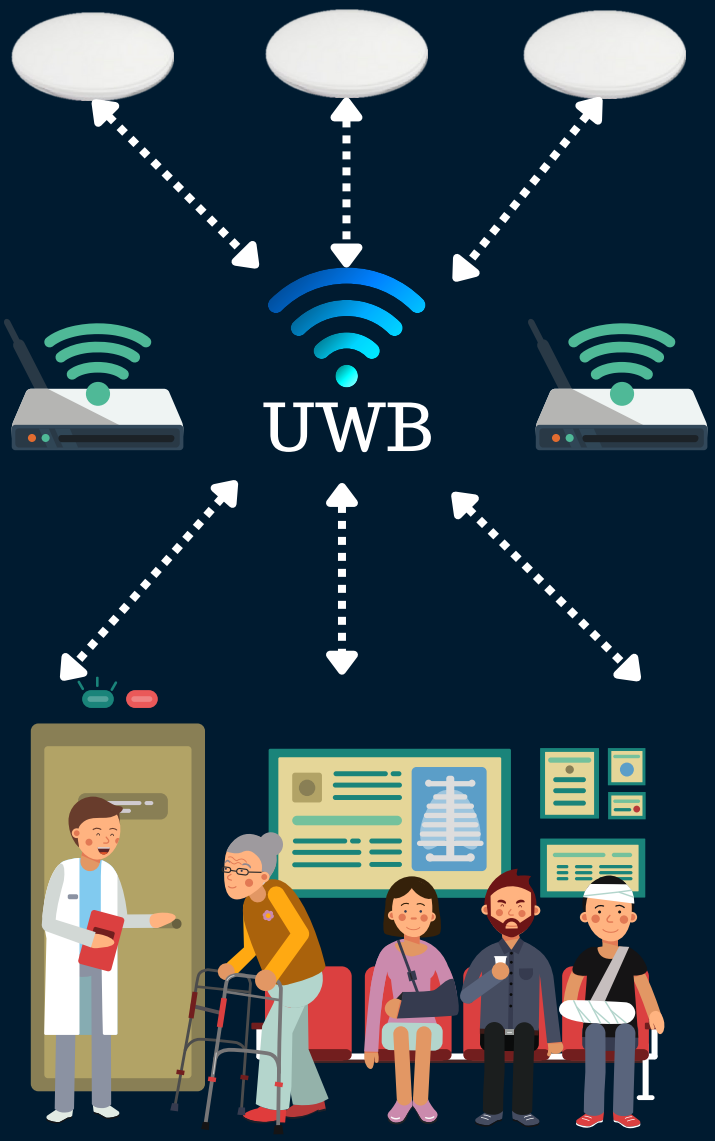
The UWB (Ultra-Wideband) RTLS (Real-Time Location System) tracking system is a technology used for accurate and real-time tracking of assets, people, or objects within a designated area. It utilizes UWB technology, which operates at a wide frequency range and enables precise positioning with high accuracy. The UWB RTLS tracking system consists of anchor nodes and tags. The anchor nodes are strategically placed throughout the area and serve as reference points for location calculations. The tags, which can be attached to assets or carried by individuals, communicate with the anchor nodes to determine their position.

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)

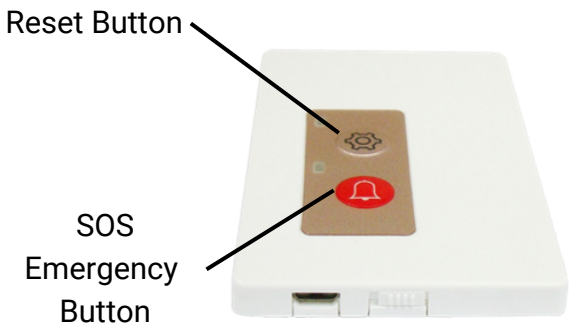


BENEFITS

- High Accuracy: Achieves precise positioning with centimeter-level accuracy.
- Real-time Tracking: Enables real-time tracking and monitoring of assets or individuals.
- Interference Resistance: Resilient to obstacles and multipath interference.
- Wide Area Coverage: Covers large areas, suitable for diverse environments.
- Efficient Resource Management: Optimizes workflow and improves operational efficiency.
- Increased Safety and Security: Enhances emergency response and asset protection.
- Scalability: Easily scalable to accommodate changing needs and larger areas.

UWB TRACKING TECHNOLOGY

UWB Tag and UWB Anchors (For Precise Positioning)



- High precision to centimeter level Ultra Wideband
- 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

UWB Anchors

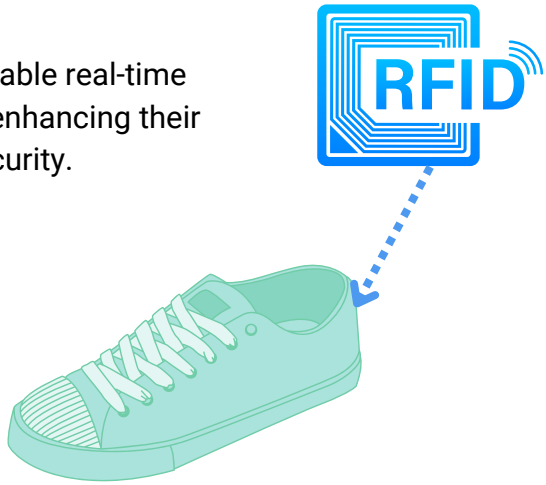
UWB anchors emit short-duration, high-frequency pulses of radio waves that can be used to measure the time of flight (ToF) of signals between the anchors and UWB tags

RFID TRACKING TECHNOLOGY

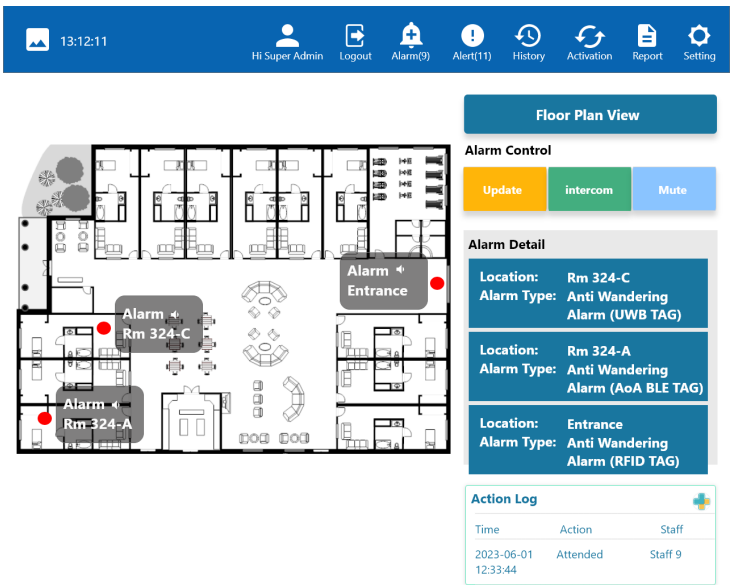
A real-time location tracking solution based on RFID technology involves the use of RFID tags and readers to accurately track the location of objects or individuals. RFID tags, which contain unique identification information, are attached to the objects or worn by individuals. RFID readers, placed strategically in the environment, detect the tags' signals and transmit the data to the central system. This system then processes the information and provides real-time updates on the location of the tagged items, enabling efficient monitoring, inventory management, and security applications.

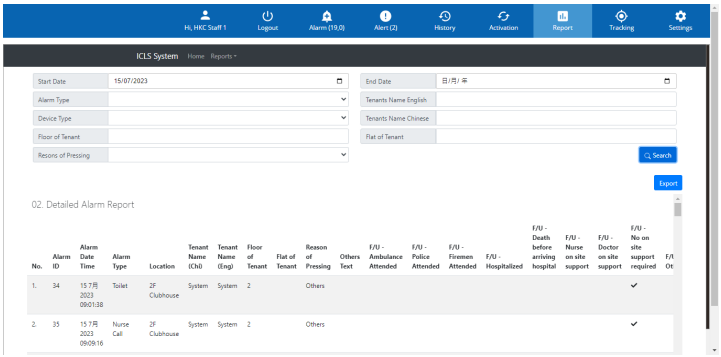
RFID tracking carpet utilizes embedded RFID technology to monitor and track objects or individuals as they move across its surface.

RFID tags on shoes enable real-time tracking of the elderly, enhancing their safety and security.

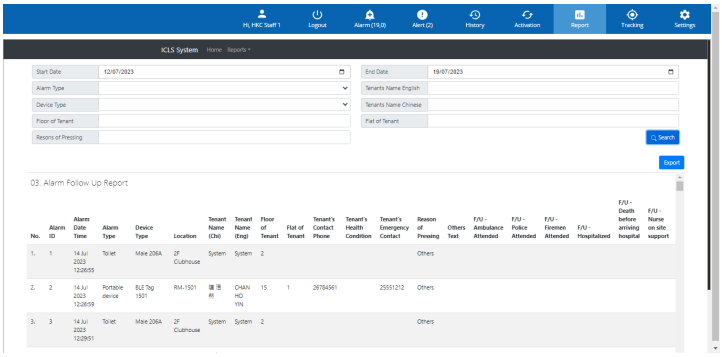


RTLS SOFTWARE PLATFORM

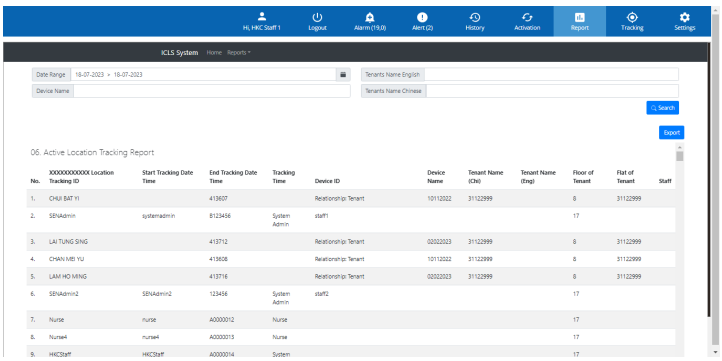




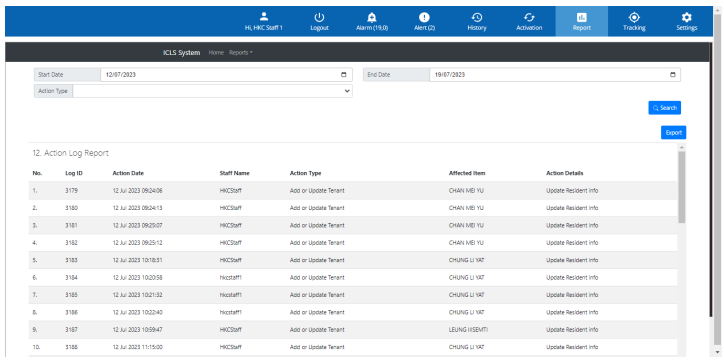
Detailed Alarm Report



Alarm Follow Up Report



Active Location Tracking Report



Action Log Report

The RTLS platform with UWB/AoA/RFID tags offers several features:

1. **Accurate Positioning:** Utilizes UWB, AoA Bluetooth and RFID technology to achieve precise positioning with centimeter-level accuracy.
2. **Real-Time Tracking:** Enables real-time tracking and monitoring of assets or individuals.
3. **Scalability:** Can handle a large number of tracking tags simultaneously, making it suitable for both small-scale and large-scale deployments.
4. **Integration Capabilities:** Supports integration with other systems or software applications, allowing seamless data exchange and utilization of tracking information.
5. **Analytics and Alerts:** Provides advanced analytics capabilities for insights into asset utilization and movement patterns, and generates alerts and notifications based on predefined rules or conditions.

The following types of report formats are available for management team:

1. Alarm Statistics Report
2. Detailed Alarm Report
3. Alarm Follow Up Report
4. Alert Statistics Report
5. Detailed Alert Report
6. Active Location Tracking Report
7. Subscription Summary Report
8. Staff List Report
9. Tenant List Report
10. Tenant Device Report
11. Device Report
12. Action Log Report

BENEFITS & IMPACT

The deployment of Location Tracking Solution will improve the overall safety of elderly homes / hospitals

- 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
- Tracking tags or wristbands are easy and fast to wear by children and elderly
- Integration of UWB, AoA Bluetooth and RFID Technology in one platform
- We provide on site installation and professional after sales service

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

HongKong

Hong Kong Communications Co., Ltd.
Address: 14/F., Block B, Vita Tower, 29 Wong Chuk Hang Road, Hong Kong
Tel: +852 2527 8822 Fax: +852 2865 6016
Email: contact_hkcgroup@hkc.net
Website: http://www.hkc.com.hk

HKC Technology Limited
Address: 14/F., Block B, Vita Tower, 29 Wong Chuk Hang Road, Hong Kong
Tel: +852 2255 9488 Fax: +852 2255 9490
Website: http://www.hkc.com.hk

China

HKC Technology (Shanghai) Co., Ltd.
Address: Room 606,Fudan Sofware Park,NO.188 Changyi Road,Baoshan Distrist,Shanghai
Tel: +86 21 6170 2233
Fax: +86 21 6170 2260
Customer Service Hotline: 400 670 2363
QQ Online Chat No. 2223036659 / 1106745048 / 752741235

Singapore

Singapore Communications Co Pte. Ltd.
Address: 8 Jalan Kilang Timor #03-09 Kewalram House Singapore 159305
Tel: +65 6880 0800(General), +65 6880 0811(Customer Service)
Fax: +65 6880 0899
Email: sales@singcomm.com.sg
Website :http://www.singcomm.com.sg

HKC 香港通訊
hkc香港通訊
hkc_marketing
2527-8822