We Connect Everything to improve the quality of life

Smart Nursing Home
All-in-one smart healthcare solution

HKC
香港通訊

"Care with Heart
　　　　the Heart has no wrinkles"

About HKC

Hong Kong Communications Co., Ltd offers a flexible and intuitive healthcare solution backed by a range of patient monitoring devices and linked with our healthcare platform - **CICS Smart Nursing Home**, stands for Communication Integrated Caring System (CICS) to improve the quality of elderly care, safety and service delivery. This solution integrates various advanced information technology and devices that transform healthcare.

CICS Smart Nursing Home empowers healthcare professionals with visibility solutions and analytics to advance the quality of care. Our technologies enable healthcare organizations to collect data from multiple sources - medical devices, patients and staff, gathering insight and seeing trends that allow you to predict and forecast. Using the latest in business intelligence and analytics, our software applications improve the bottom line by optimizing how hospitals allocate resources and respond accordingly through powerful analytics, decision-making tools, reports and dashboards.

Evolution of Smart Nursing Home

Social Engagement and Leisure

Smart home functions that allow elderly to combat social isolation, such as by connecting with friends and family.

Safety

Safety is about detecting hazards in order to prevent impairment to elderly and the use of network based system to contact family memebers in the case of an emergency

Personal Hygiene and Care

Personal hygiene and care encompass technologies that can improve elderly well-being

Health and Nutrition

Monitoring vital signs, state of health and adequate nutrition intake

Physical Activity

Daily exercise and training applications are crucial to the maintanance of good health and prevention of accidents such as falls

Nurse Call Unit

One large round button for nuse call with nurse symbol on the both panel and call cord

Contain build-in speaker on panel and microphone on both panel and call cord for patient and staff active communications

Call unit will send out alert signal to the central control office for real time record

Monitoring staff's service by recording the respond time

Bathroom / Toilet Call Unit

Patient pull the cord to call nurse / alert the alarm for emergency

Location information report to the central control office

Water-proofed

Wired or Wireless (LoRa / Wi-Fi) Connection

*Optional : Integrate with wireless bed / seat pad sensor with automatic reminder messeges

Wireless bed / seat pad sensor

"Buddy, please don't leave the bed now, our nurse is coming to assist you"

Cloud Platform Nurse Call System

Keeping elderly home safe and secure with healthcare facility is a complex task.
More elderlies to serve, tightening regulations and security challenges.

Our Nurse Call System helps to:

- Real time centralized monitor and manage all health information and alerts
- SLA response time measurement
- Protect high-risk patients with full visibility and avoid wandering away
- Provide peace of mind for staff, elderlies and family
- Increase the efficiency of healthcare workers

Alarm Monitoring System
Please select station

Control Office

Wristband with Panic Button

This BLE Smart wristband in high-quality silcone is adapt for elderly care with a one touch panic button

Alarm information report to the central control office

Emergency Call

UWB PRECISE POSITIONING
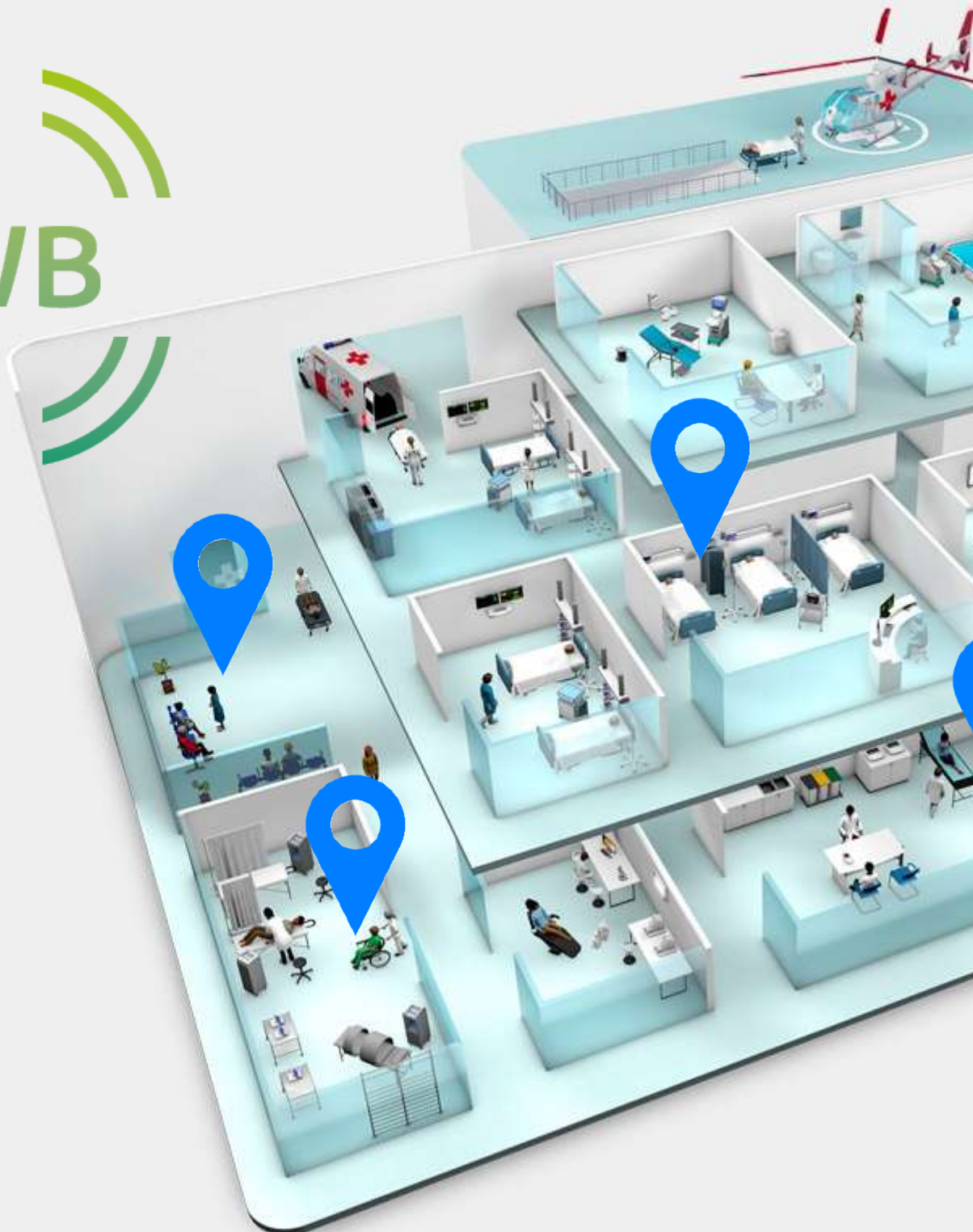## Locate patient and device with accuracy of centimeter level

- Armband, lanyard, wristband
- Long battery life
- Li-ion battery
- Programmable buttons

UWB Tag

- UWB Anchors
- Line of sight triangulation
- 3 or more required per space

UWB Anchor

UWB

Patients wear **UWB Tags** with high precision adopting the Ultra wide-band technology
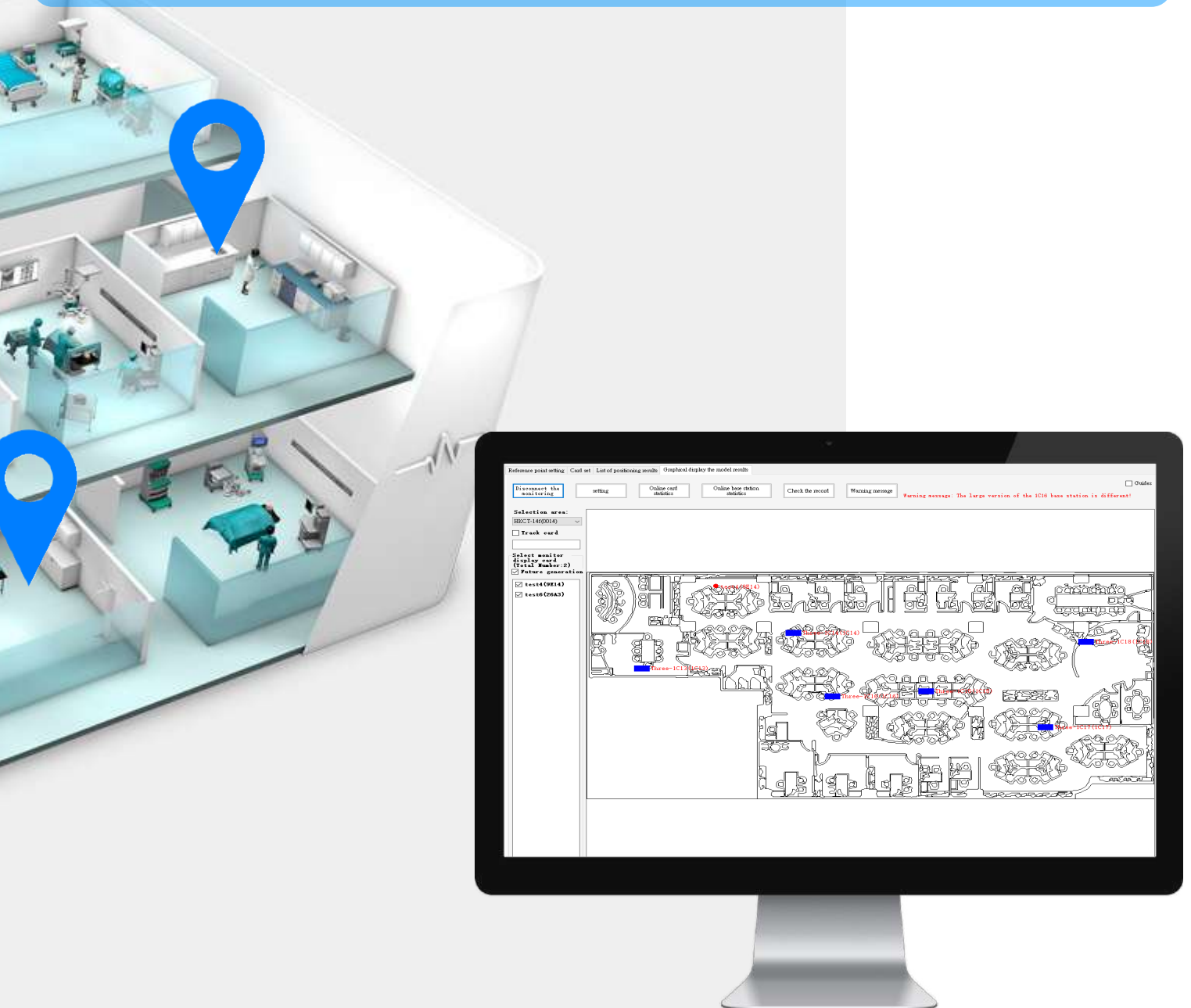
UWB Anchors are installed on the hospitals' walls or ceiling in fixed locations up to 25 meters apart. The anchors can be powered via USB or PoE (Power Over Ethernet). For example, a 10000 mAh USB battery can power the anchor for 50-60 hours or so.

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 the UWB tags. Once synchronized, they record the time when the signal was received and pass it to a backend "Real Time Location Server" (RTLS) which calculates the tag's position based on time difference of signal arrival at the anchors (TDoA).

RTLS Server

The RTLS apps subscribe to location updates from the RTLS backend service using standard web-sockets or RESTful APIs to read the location data of a tag. The RTLS has other nice features like recording location data and presenting reports like heat-maps and such.

UWB installations are far easier to setup than iBeacons and more predictable than iBeacon setups. What's needed are anchors on walls, RTLS Mini-PC box, tags and WiFi.

Real time location system

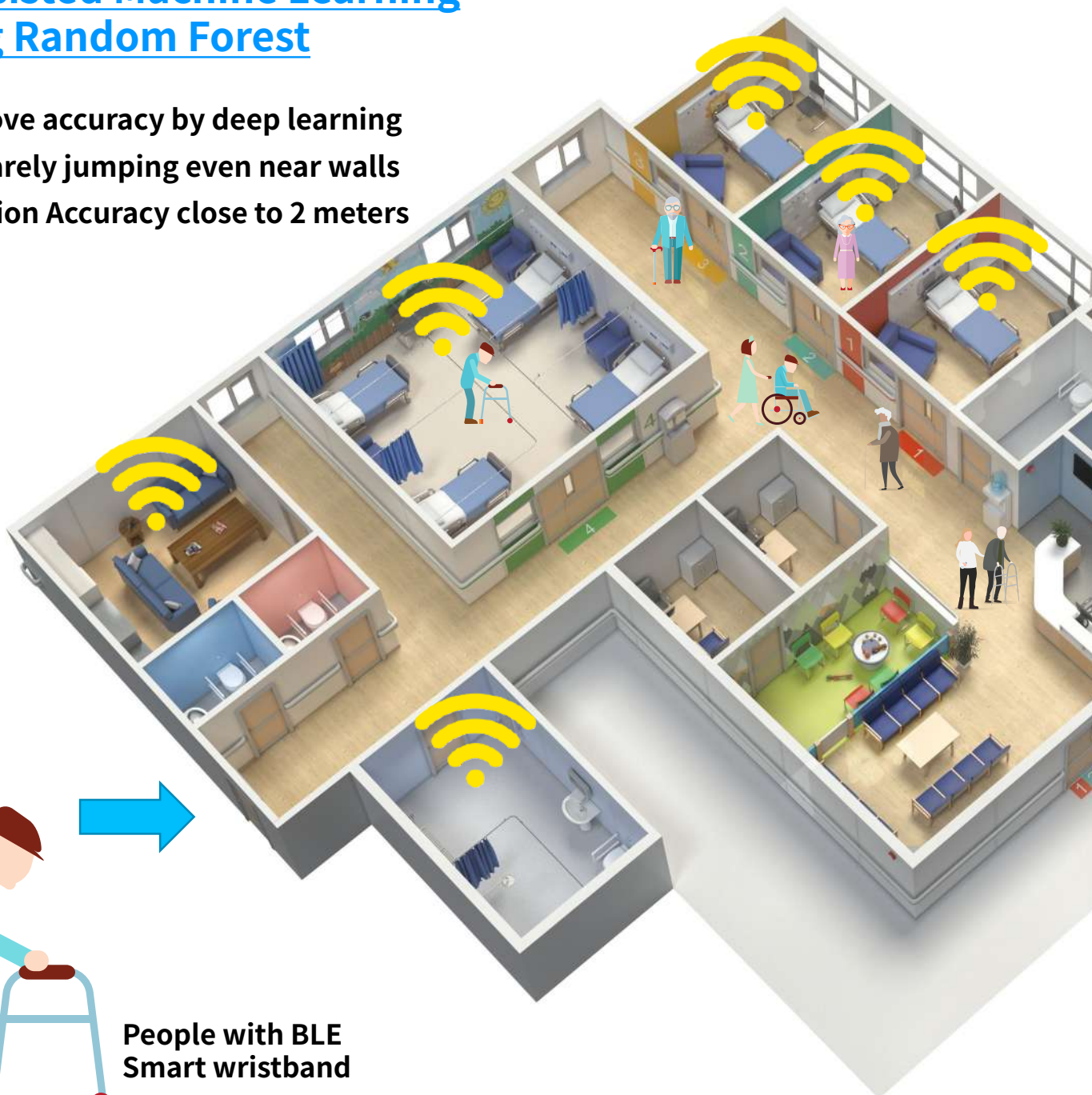# BLUETOOTH BEACON PRECISE POSITIONING

Wristband BLE Tag

BLE Gateway

AI assisted Machine Learning using Random Forest

* Improve accuracy by deep learning
* It is rarely jumping even near walls
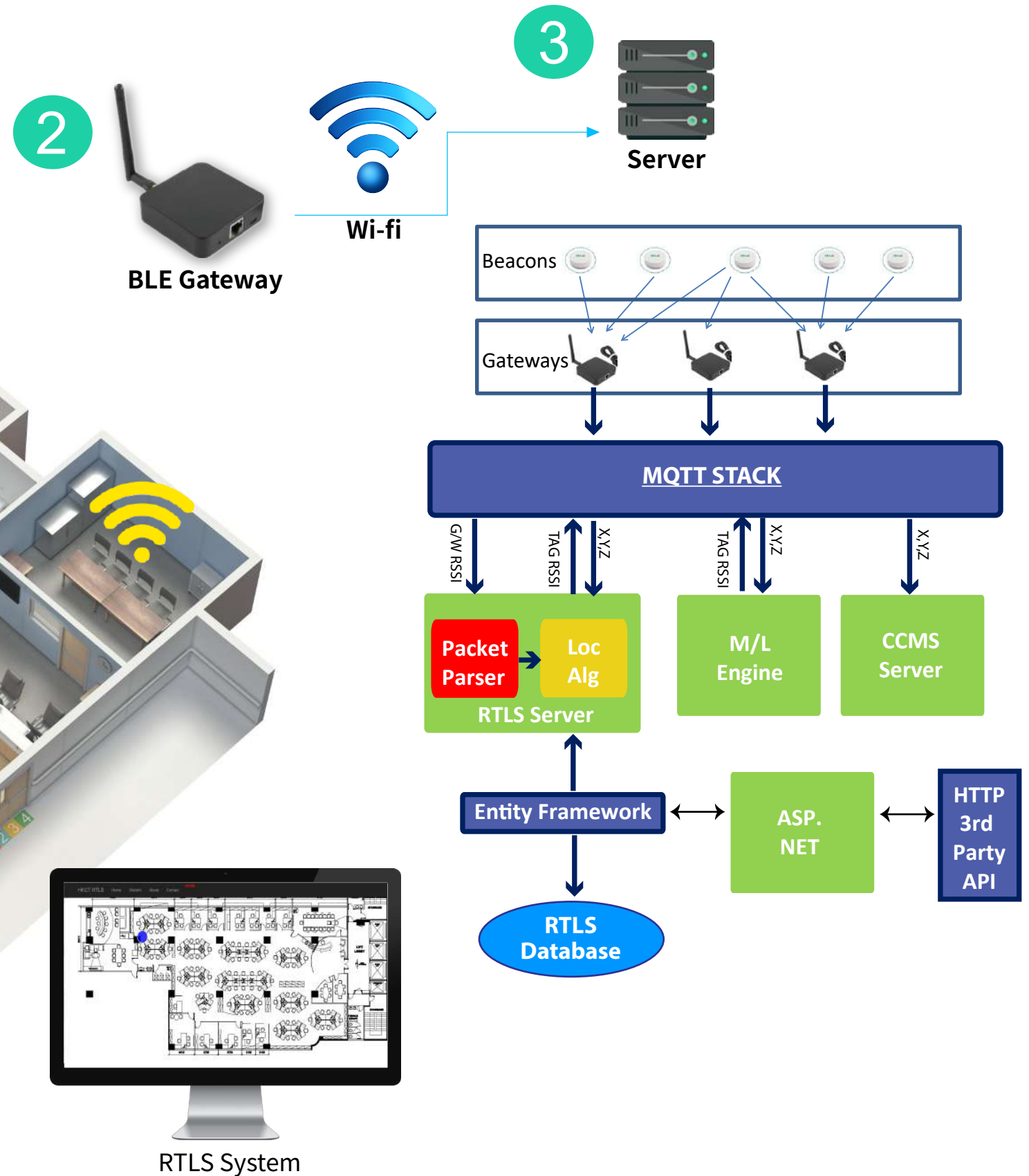* Location Accuracy close to 2 meters

1

People with BLE
Smart wristband

System Architecture

1. Bluetooth Low Energy (BLE) tags are worn by health care staffs or caretakers
2. BLE Gateways are installed throughout the premises
3. Gateway data is sent via Wi-Fi on premises server
4. Information on real time location and movement is displayed on customized app / web interface

2 BLE Gateway

Wi-fi

3 Server

Beacons

Gateways

MQTT STACK

G/W RSSI — TAG RSSI — X,Y,Z — TAG RSSI — X,Y,Z — X,Y,Z

Packet Parser → **Loc Alg**
RTLS Server

M/L Engine

CCMS Server

Entity Framework ↔ **ASP. NET** ↔ **HTTP 3rd Party API**

RTLS Database

RTLS System

Fall Detection

Motion detection sensor is one of an intelligent smart washroom management equipment. It can prevent accidents caused by accidental faint in toilet compartment. If dynamic sensors are installed in toilet compartment, once it detected the elderly does not move in the toilet for more than 10 minutes, the sensor will automatically notify the management staff and issue an abnormal alarm, so that the administrator can call the ambulance for immediate rescue.

✓ Easy to use

✓ Easy installation

✓ Battery powered

✓ 10 mins (adjustable) for abnormal alarm

✓ Siren can be connected

✓ Mobile APP/web base alarm system (optional)

✓ Low-power LoRaWAN remote network connection (optional)

✓ Connect door contact sensor (optional)

2. Health and Nutrition

Health Data Monitoring

All-in-one health data monitoring unit embedded with blood pressure, SpO2 monitor, ECG monitor, thermometer, blood glucose measurement, weight scale etc which provide clinicians instant indications of patients' real time status.

Bio-data Collection Devices

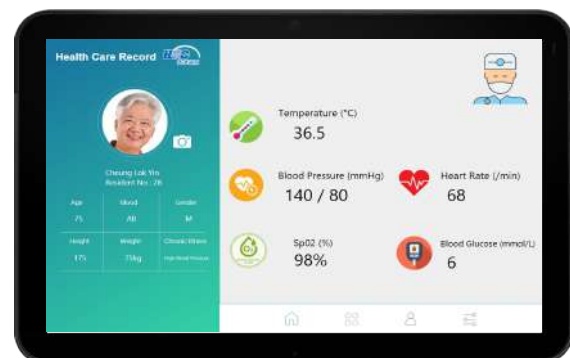Thermometer   Blood Pressure Monitor   Glucose Meter

Vital Sign Monitor
(Integration with nurse call system)

All in one device with non-invasive blood pressure, SpO2 monitor, ECG monitor, Ear Temperature and Blood Glucose Measurement

7" TFT color LCD touch screen provide clinicians with instant indication of patient's status

Equipped with rolling stand for easily moved from one patient to another

Optional Bluetooth, GSM/GPRS or Wi-Fi connect with the central control office for data recording

Cloud Health Data Monitoring

Cloud-based system allows caregivers to remotely monitor the health status of patients and offer the medical service via the Internet despite the distance restriction. With the integrated biometric-data collection devices, system will keep the patient's vital health records for medical treatment analysis. Patient's family can remotely monitor patient's situation and response efficiently to the changed health status.

3. Physical Activity

In the aging population, exercise has been shown to prevent disease, lower the risk of falls, improve mental health and well-being, strengthen social ties, and improve cognitive function.

In front of Smart Mirror, elderlies can workout with their favorite

personal trainer anytime, installed with extensive workout library

covering yoga, HIIT, kickboxing, barre, meditation, and even Wing Chun

4. Personal Hygiene and Care

Prevent Covid-19 with UV-C

UV-C Disinfection Machine

UV-Wavelength
254nm (UV-C rays) x 6 (36W) CE Certified

Human Detection IR Sensor (Max. 6 meters)
UV-C lights will automatically turn off if someone approaches

Rotation Reflector
Rotation reflector for protection of UV-C lights

The drive for digitalization improves workflow efficiency, enhances the accuracy of communications, mitigates risk and upgrades patient experience.

However, some aspects of patient/clinician communication in hospitals still relies on manually updated whiteboards and door information cards, increasing the workload of nurses and clinicians, and increasing the risk of errors, or outdated information.

There is a new solution that promotes hospitals to use digital signage, without taking a step back with light pollution:

Patient Room Door Sign

The Patient Room Door Sign can connect wirelessly to a hospital or facility's EHR / EMR system so updates can be pushed in real-time. It can be custom configured to show alerts such as visitor restrictions, allergies or medical precautions so clinicians and visitors are aware before entering the room. Clinicians can easily confirm patient care team information.

Key Points:
- Easy installation - as easy as hanging a picture on the wall
- Battery powered - no wiring required
- Information always-on and easy to read, even during power outages
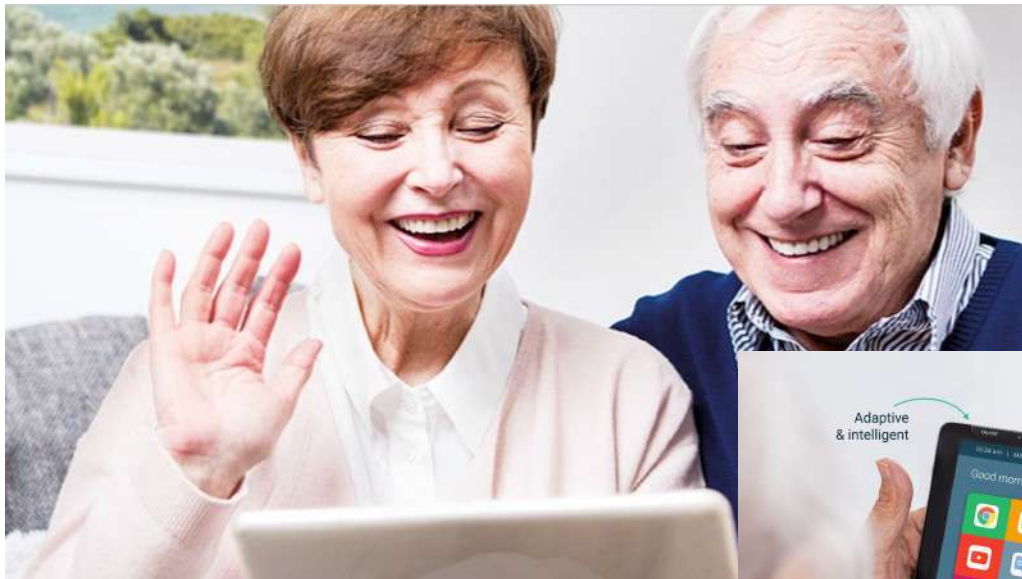- Long battery life
- No light pollution
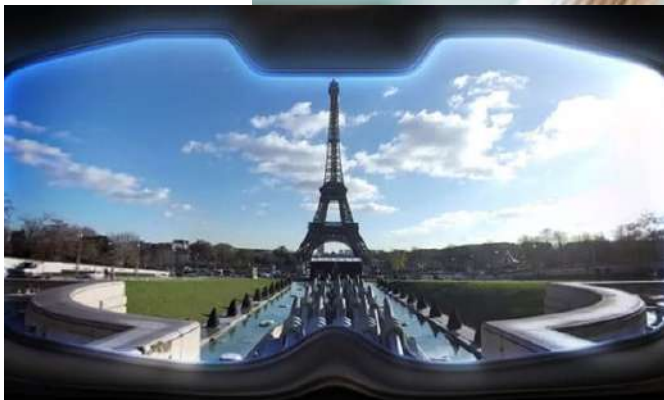
Patient Care Sign

The Patient Care Sign can connect wirelessly to a hospital or facility's EHR / EMR system so updates can be pushed in real-time. It can be custom configured to show patient alerts such as visitor restrictions, allergies or medical precautions so clinicians have all relevant patient information at a glance, increasing the trust and satisfaction from patient. The nurse call button and responding time-stamp can be integrated to the device for workflow data analysis.

5. Social Engagement and Leisure

A easy friendly tablet interface designed for seniors irrespective of their technical capabilities. It runs on an open platform that allows senior care providers to deliver better care or a chatbot for entertain and gaming in elderly care homes

VR Experience allows elderly to not only exercise their brain, but "travel" across the world and relive memories within the walls of a retirement or nursing home. Virtual reality helps seniors not only by boosting their mood, but also promoting brain activity—both which reduce overall healthcare costs exponentially over time.

Hong Kong

Hong Kong Communications Co., Ltd.
Address: 14/F., Block B, Vita Tower, 29 Wong Chuk Hang Road, Hong Kong
Tel : +852 2528 3936 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.hkctech.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
Website : http://sh-hkc.cn/

HKC International Holdings Limited

https://www.youtube.com/
HKC Marketing

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