

Real-Time Location System for iHospital

Enabling operational intelligence in healthcare

Solution Ready Package



Asset Management



People Tracking



Patient Wayfinding



Dispatch Management



RTLS for Hospital

Advantech's real-time location system (RTLS) is a solution-ready package (SRP) enabling the immediate location tracking and status monitoring of medical equipment, staff, and patients. The healthcare sector strives to improve patient experiences, reduce delays, and maintain a high quality of care. Using RTLS, healthcare providers can identify, locate, and track assets and resources; yielding a productive, efficient, and safe work environment. Advantech's multi-mode sensing dynam-

ic fusion (MSDF) technology utilizes a software algorithm and hardware solution for complex indoor environments with patients such as in hospitals, nursing homes, and physical examination centers. This IoT management solution enables outpatients navigate facilities, improves customer satisfaction, and enhances safety and efficiency by streamlining and optimizing medical care.



General Management

- Reduces time wastage due to missing assets
- Identify bottlenecks and manage time by improving processes, expediting movements, and reducing decision making



Patient and Visitor Processing

- Manage personnel movement using the cloud to improve clinical efficiency
- Streamline processes for patients, visitors, and staff



Taipei Municipal Wan-Fang Hospital OR Asset Positioning Management

This stable system increases operation efficiency and turnover rate.

Size: 2000 m²
(21527.8 sq ft)

40 Locators
110 Tags

18 Operating Rooms
Started November 2018



Application Advantages



Asset Management

- Reduce asset misplacement and optimize equipment use
- Prevent equipment loss and theft using entry/exit monitoring
- Instantaneous inventory reporting of tagged assets



Efficient OR Management

- Use real-time notifications to reduce turnaround time and device preparation
- Streamline clean-up times using staff notifications
- Continuous temperature and humidity monitoring and documentation for OR infection control



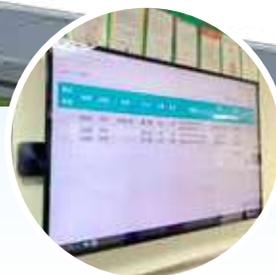
Infection Control

- Manage quarantined patients using auto alarm to reduce transmission
- Manage contamination by tracking the history and movement of patients and staff



Quality Care

- Increase workforce accountability and efficiency
- Access a floor plan via the cloud and improve clinical efficiency
- Save caregiver time without compromising workflow or quality



Taipei Hospital OR Patient Status Automatic Update System

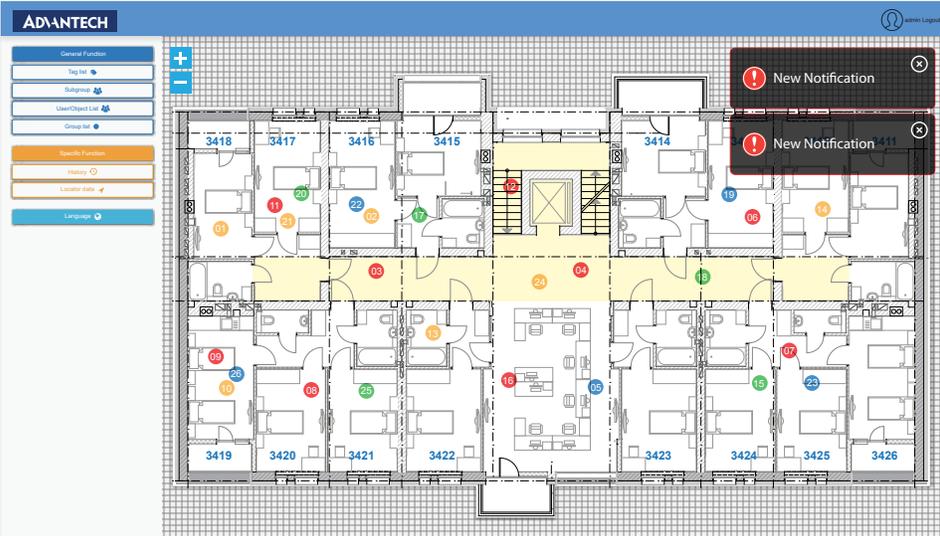
By enabling real-time updates on patient health, hospitals can ease the anxiety of patients' loved ones.

Size: 1200 m²
(12916.7 sq ft)

22 Locators
30 Tags

8 Operating Rooms
Started February 2019

Adaptable Functionality



Basic Location Tracking

- Patient, personnel, and asset location
- Tag information display
- Alarms and notifications
- Emergency button
- 2/2.5D map support
- Multi-lingual support
- Quick zoom in/out

SN	Identification Number	User Object	Remaining power	last connection	current area	current floor	Status	Operation
1	J00001	Suction Pump Unit	100%	1/13/20 9:18 AM	R3415-2	14F		Create Return
2	J00002	Suction Pump Unit	90%	1/13/20 9:58 AM	R3415-1	14F		Create Return
3	J00003	Suction Pump Unit	96%	1/13/20 9:21 AM	R3415-2	14F		Create Return
4	J00004	Pulse Oximeter	99%	1/13/20 7:40 AM	R3427	14F		Create Return
5	J00005	Pulse Oximeter	100%	1/13/20 9:10 AM	R3411-4	14F		Create Lease
6	J00006	Pulse Oximeter	100%	1/13/20 8:18 AM	Path	14F		Create Return
7	J00007	atient Monitor	100%	1/13/20 6:33 AM	R3415-1	14F		Create Return
8	J00008	atient Monitor	100%	1/13/20 5:54 AM	R3412-3	14F		Create Return
9	J00009	Defibrillator	93%	1/13/20 2:20 AM	R3416	14F		Create Return
10	J00010	Defibrillator	100%	1/13/20 8:38 AM	Path	14F		Create Return

Quick Sorting and Classification

- Status overview
- Grouping by color/category
- Asset/patient classification
- Quick search functionality



Movement Record Analysis

- Hot spot analysis
- Contact info review
- Record patient movements
- Duration of stay review
- Location and status monitoring

Taichung Chung-San Medical University Hospital Asset Positioning Management System

This system streamlines hospital asset management by reducing the time needed to search for and repair equipment.

Size: 2000 m²
(21527.8 sq ft)

22 Locators
50 Tags

35 Patient Rooms
Started October 2019



RTLS for Hospitals Ordering Guide



Locator



Locator



Tag



Band Bracket

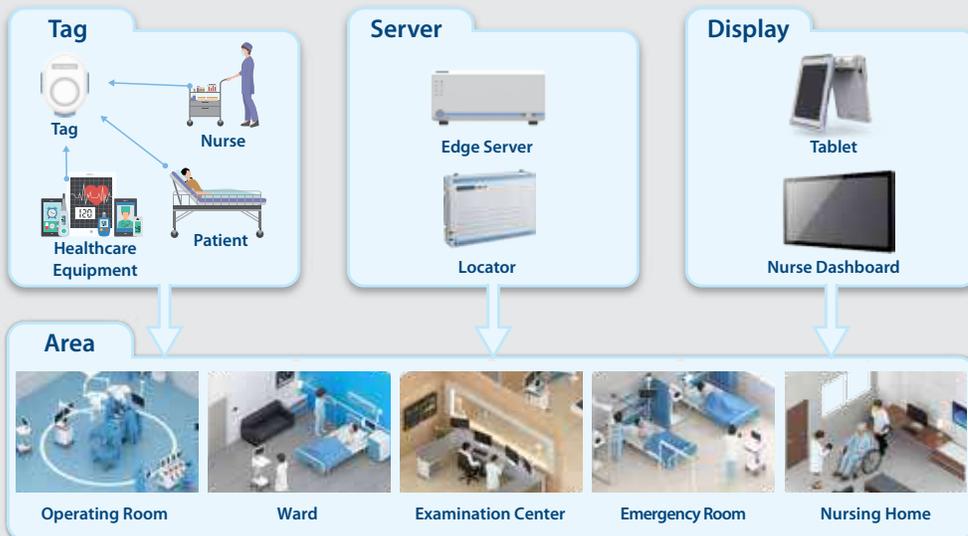


Badge Bracket

Part Number	USM-110WN0L1	USM-110WN1L1	LEO-L02-U00	LEO-L02-W00 LEO-L02-W01	LEO-L02-W02
Dimensions	150 x 112 x 20 mm (5.9 x 4.4 x 0.78 in)	150 x 112 x 20 mm (5.9 x 4.4 x 0.78 in)	32 x 32 x 6 mm (1.25 x 1.25 x 0.23 in)	220 x 46 x 10 mm 330 x 46 x 10 mm	46 x 34 x 10 mm (1.81 x 1.33 x 0.39 in)
Range	10 ~ 15 m (32.8 x 49.21 ft)	30 ~ 50 m (98.4 ~ 164 ft)	15 m (49.2 ft)	N/A	N/A
Specs	BLE4.2	BLE5.0	BLE4.2/5.0	N/A	N/A
OS	Linux Yecto	Linux Yecto	iOS 7/Android 4.3	N/A	N/A
Power	100 ~ 240 to 12V 10W	100 ~ 240 to 12V 10W			



Part Number	ESRP-RTL-500	ESRP-RTL-300	VEGA-7010	DSDP-0554K	AIM-55
Dimensions	320 x 132 x 310 mm (12.5 x 5.18 x 12.2 in)	320 x 88 x 310 mm (12.5 x 3.46 x 12.2 in)	44 x 438 x 550 mm (1.74 x 17.2 x 21.6 in)	1306 x 776 x 74 mm (514 x 305 x 29.1 in)	160 x 61.8 x 189.2 mm (6.3 x 2.4 x 7.4 in)
Specs	Intel® Core™ i7-8700, 16 G, 500 tags	Intel® Core™ i5-8500, 16 G, 500 tags	Intel® Xeon® E3-1245 v6 CPU	55" full HD display	Intel® Atom® x5-Z8350 CPU
OS	Win 10	Win 10	Win 10	Display only	Z8350
Supported Devices	500 pcs	300 pcs	500 pcs	IR touchscreen	Multi-point touchscreen
Power	100 ~ 240V/500W	100 ~ 240V/250W	AC 100 ~ 240V/550W	AC 100 ~ 240V/76W	DC 19V/45W



Part Number	Description
31ASRTLS500	RTLS SW for 500 m ² (5381.96 sq ft)
31ASRTLS2000	RTLS SW for 2000 m ² (21527.8 sq ft)
31ASRTLS3000	RTLS SW for 3000 m ² (32291.7 sq ft)
31ASRTLS5000	RTLS SW for 5000 m ² (53819.6 sq ft)

Advantages of Bluetooth Tags for Hospital RTLS

Advantech's RTLS solution uses Bluetooth tags, which are small devices that can be attached to any object to monitor its location. These tags broadcast Bluetooth signals that can be detected by other Bluetooth devices and readers.

Tag technology is used by many companies and hospitals to track equipment and people, facilitate dispatch management, and assist wayfinding. Because the Bluetooth standard has been widely adopted around the world, BLE solutions are cheaper and easier to integrate with existing systems and devices compared to other technologies. Moreover, RTLS systems that employ Bluetooth tags offer a detection accuracy of up to 1 meters, making them suitable for diverse healthcare applications.

	 Bluetooth Low Energy (BLE) Angle of Arrival (AoA)	 Ultra-Wideband (UWB) Round-Trip Time (RTT)	 Ultra-Wideband (UWB) Time Difference of Arrival (TDOA)	 Wi-Fi/Active RFID Received Signal Strength Indicator (RSSI)	 Beaconing Received Signal Strength Indicator (RSSI)
Developed for Positioning	Yes	Yes	Yes	No	Some
Tag Power Consumption	Very low	Very high	Low	High	High
Accuracy	1 ~ 1.5 m (BLE4.2/5.0) 0.3 ~ 1 m (BLE5.1)	0.3 ~ 1 m	0.3 ~ 1 m	5 ~ 20 m	5 ~ 20 m
Real-Time Operation	Yes	Yes	Yes	No	No
Smartphone Compatibility	Yes	No	No	Yes	Yes
IoT Gateway	Yes	No	No	Yes	No
Cost of Setup	Medium	Medium	Very high	Medium	Low
Cost of Ownership	Low	High	Medium	Medium	Medium



High performance-cost ratio

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