



**UbiTrack®**

**UWB Positioning System**



[www.ubitrack.com](http://www.ubitrack.com)

# CONTENTS



INTRODUCTION



PRODUCTS



UBITRACK  
PLATFORM



USE  
CASES



ADVANCED  
SERVICES

A light grey world map is centered in the background. Overlaid on the map are several geometric shapes: a large blue triangle pointing right from the bottom left, a blue triangle pointing left from the top right, and a grey diagonal bar crossing the map from the bottom left to the top right.

**PART 01**

# **Introduction**



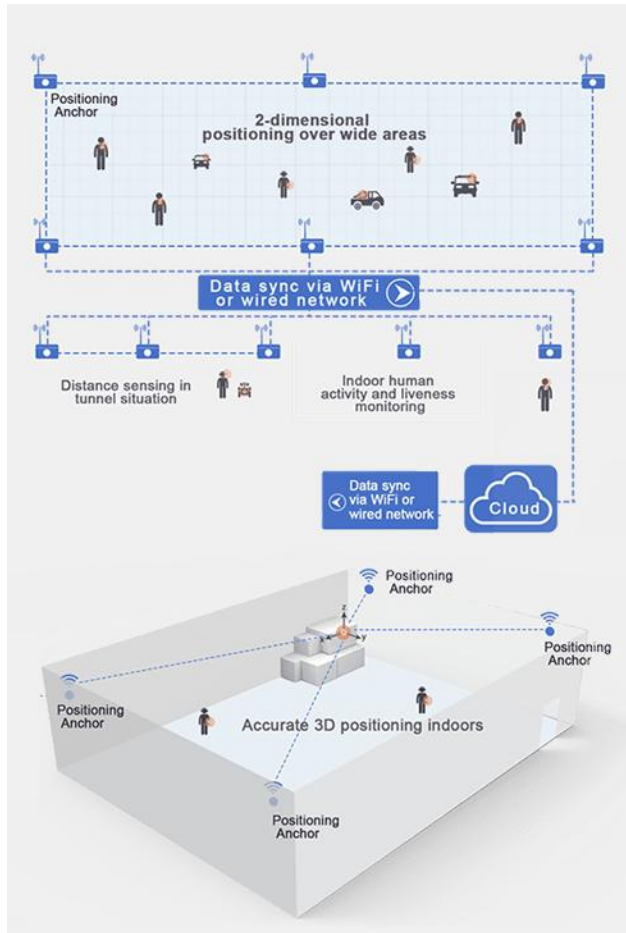
# Introduction

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UbiTrack® is an integrated multi-dimensional indoor positioning solution, featuring high accuracy, flexibility and low cost. The system enables access to functions such as real-time positioning, tracking playback, high-speed camera linkage, accurate face recognition, electronic fence alarm and so on. Configuration and deployment takes just four steps: deploying the positioning anchors, configuring the software, uploading the floor plan, and setting up the positioning tags.



# System architecture and functionality



The products include positioning anchors and positioning tags (customisable form). The centimetre-level positioning standard is achieved by combining UWB (Ultra Wideband) wireless communication with multiple algorithms. The product has the advantages of high accuracy positioning, low power consumption, high anti-interference capability, low cost and small size. Easy to deploy and highly reliable. The product format is not limited and can be designed flexibly for different applications and additional functions can be added.

To meet different needs of system integrators and end users , a number of data analysis and processing algorithms are used, and also a mixture of algorithms. Users can choose from a variety of positioning modes such as spatial positioning (3D), area positioning (2D) and track positioning (1D). Based on TWR and TDOA positioning methods, the system can accurately locate the position of people, vehicles, assets and surrounding environment information in real time without interruption.



# Hardware Products

## Hardware Products

Positioning Anchor		Positioning Badge Tag			Positioning Goods Tag	Positioning Wristband Tag		Hybrid Positioning Tag
								
UbiTrack-A1	UbiTrack-A2	UbiTrack-TB1	UbiTrack-TB3	UbiTrack-TB4	UbiTrack-TG2	UbiTrack-TWC1	UbiTrack-TWL2	UbiTrack-TUG2

<p>Features:</p> <ul style="list-style-type: none"> <li>Easy installation</li> <li>Wired/wireless connection supported</li> <li>POE power supply</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Aluminium alloy metal shell</li> <li>Water-/Dust-/Shock-proof (IP65)</li> <li>Omnidirectional antenna</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Contactless door access (RFID)*</li> <li>E-ink screen</li> <li>Notification information</li> <li>Voice prompt</li> <li>SOS one-click alarm</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Contactless door access (RFID)*</li> <li>Small and handy</li> <li>Waterproof</li> <li>E-ink screen</li> <li>Notification information</li> <li>Voice prompt</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Contactless door access (RFID)*</li> <li>Small and handy</li> <li>Waterproof</li> <li>Notification information</li> <li>Voice prompt</li> <li>SOS one-click alarm</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>IP65</li> <li>SOS one-click alarm</li> <li>Power display</li> <li>Magnetic suction charging</li> <li>Multiple installation modes</li> <li>Smaller size</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Waterproof</li> <li>Touch screen interaction*</li> <li>Heart rate monitor</li> <li>Activity intensity detection</li> <li>SOS alarm</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Waterproof</li> <li>Non-Removable Wristband</li> <li>isconnection alarm</li> <li>Heart rate monitor</li> <li>Activity intensity detection</li> <li>SOS alarm</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>Intelligent switch between UWB and GPS</li> <li>Full-scene positioning</li> <li>E-ink screen</li> <li>Notification information</li> <li>Voice prompt</li> </ul>
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**PART 02**

# Products



# Indoor Anchor A1

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UbiTrack-A1 provides high accuracy measurements. With its high performance MCU, it is capable of supporting large number of tags at the same time. The physical appearance of the anchor can be customized if wanted.



Power Supply: PoE or DC12V /1A



Network: Supports Ethernet(PoE)



Positioning System Frequency: 3.5GHz-6.5GHz



Operating Temperature: -20°C to 60°C

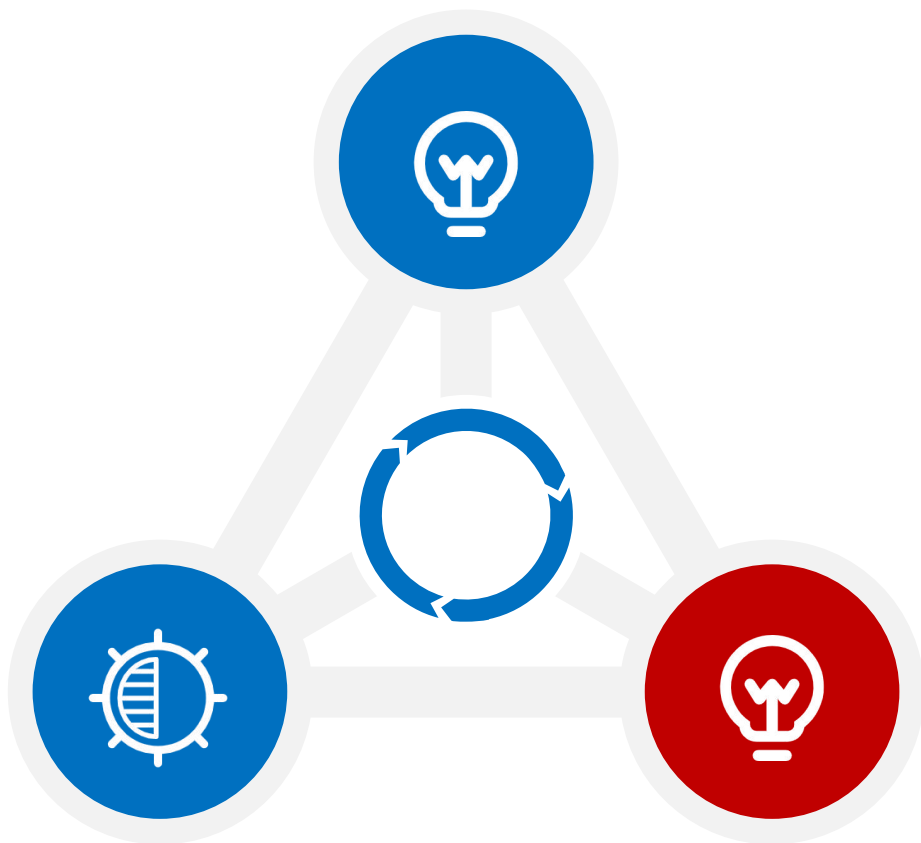


Dimensions: 7.87" × 7.87" × 1.77" (200mmx200mmx45mm)



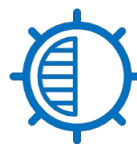


# Indoor Anchor A1



## Blue light flashing at intervals

Blue light flashes at 1 second intervals, equipment in normal operation.



## Blue light flashing

Blue light flashes, no server IP address configured.



## Red light on






unable to connect to the server, please check the host is online and the server IP is correct.

# Outdoor Anchor A2

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UbiTrack-A2 is an outdoor positioning anchor that supports UWB technologies. It adopts aluminum alloy metal shell, supports IP65 waterproof and dustproof. The anchor uses the omnidirectional antenna, which allows it to work under various harsh environments.



-  Power Supply: PoE or DC 220V
-  Network: Supports Ethernet(PoE)
-  Positioning System Frequency: 3.5GHz-6.5GHz
-  Operating Temperature: -20°C to 60°C
-  Dimensions: 11.02"× 7.28"× 3.15" (280mmx185mmx80mm)
-  Housing Material: Die-casting Aluminum
-  IP Level: IP65



# Outdoor Anchor A2



Product Details



Wall Mounting Installation















Pillar Mounting Installation

# Positioning Badge TB1

UbiTrack-TB1 is a card positioning tag that can be worn as a work tag for personnel positioning. It supports UWB positioning communication. The badge includes tracking, contactless door access (RFID)\*, motion detection and SOS one-click alarm, and it can also be equipped with an optional e-ink screen to display detailed information of personnel, notification information and so on.



-  UWB Operating Frequency: 3.5GHz-6.5GHz
-  UWB Transmitting Power: 0-33.5dB (Adjustable)
-  NFC Operating Frequency\*: 13.56MHz
-  Additional Sensors: Acceleration Sensor
-  Optional E-Ink Screen: 1.91"×0.93"(48.55mm×23.71mm)
-  Stand-by Power Consumption: 0.15mW
-  Optional Functions: Messages, vibration or voice, SOS, etc.
-  Power Supply: Rechargeable 950mAh lithium battery
-  Battery Life: 1-3 months
-  Dimensions: 4.92"×2.76"×0.27"(125mm×70mm×6.9mm)
-  Operating Temperature: -20°C to 55°C
-  Operating Humidity: 10-90%

# Positioning Badge II TB3

UbiTrack-TB3 is a second generation positioning badge which is small and handy. It is used for personnel positioning and it supports UWB positioning communication. The badge supports tracking, motion detection and SOS one-click alarm, and it can also be equipped with an optional e-ink screen to display detailed personnel information, notification information and so on.



- UWB Operating Frequency: 3.5GHz-6.5GHz
- UWB Transmitting Power: 0-33.5dB (Adjustable)
- NFC Operating Frequency\*: 13.56MHz
- Additional Sensors: Acceleration Sensor
- Optional E-Ink Screen\*: 1.14"×1.14"(29mm×29mm)
- Stand-by Power Consumption: 0.19mW
- Optional Functions: Messages, vibration , RFID\* , SOS, etc.
- Power Supply: Rechargeable 400mAh lithium battery
- Battery Life: 1-2 months (1Hz)
- Dimensions: 3.50"×2.28"×0.27"(89mm×58mm×6.9mm)
- Operating Temperature: -20°C to 55°C
- Operating Humidity: 10-90%









# Non-Removable Wristband TWL2

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UbiTrack-TWL2 is a Non-Removable Wristband, mainly used in judicial settings. It has the functions of positioning, Non-Removable, physiological monitoring, electronic fence and alarm.












-  UWB Operating Frequency: 3.5GHz-6.5GHz
-  UWB Transmitting Power: 0-33.5dB (Adjustable)
-  Additional Sensors: Heart rate (photoelectric), Acceleration Sensor
-  Wristband Non-Removable Alarm Function: Support
-  Power Supply: Rechargeable 400mAh lithium battery
-  Dimensions: 10.83"×2.20"×0.81"(275mm×56mm×20.5mm)
-  Stand-by Power Consumption: 0.15mW
-  Battery Life: 1-3 months(1Hz frequency, TDOA)
-  Operating Temperature: -20°C to 55°C
-  Operating Humidity: 10-90%



# Civilian Wristband TWC1

UbiTrack-TWC1 is a smart watch positioning tag, it is mainly used for people positioning, such as the elderly or special groups. It supports UWB positioning communication. The watch has physiological monitoring, electronic fence, alarm, step counting and other functions. Its' OLED display screen can display time, heart rate, notification and other information.











-  UWB Operating Frequency: 3.5GHz-6.5GHz
-  UWB Transmitting Power: 0-33.5dB (Adjustable)
-  Additional Sensors: Heart rate (photoelectric), Acceleration Sensor
-  Power Supply: Rechargeable 400mAh lithium battery
-  Dimensions: 1.67"× 1.67"× 0.64" (42.5mm x42.5mmx16.3mm)
-  OLED Screen: 1.15"×0.58" (29.4mm×14.7mm)
-  Operating Temperature: -20°C to 55°C
-  Operating Humidity: 10-90%
-  Battery Life:1-3 months



# Goods Positioning Tag II TG2

UbiTrack-TG2 is a small and lightweight positioning tag with multiple installation modes, it can be attached to a helmet or other objects and enable you to accurately track people or goods. It also be equipped with an optional demolition prevention alert function to help you with device management.



-  UWB Operating Frequency: 3.5GHz-6.5GHz
-  UWB Transmitting Power: 0-33.5dB (Adjustable)
-  Power Supply: Rechargeable 1000mAh lithium battery
-  Battery Life: 1-4 months(1Hz)
-  Operating Temperature: -20°C to 55°C
-  Operating Humidity: 10-90%
-  Dimensions: 3.27"× 1.97"× 0.87" (83mmx50mmx22mm)
-  Optional Functions: Messages, voice, SOS, demolition prevention alert, etc.



# Hybrid UWB-GNSS Positioning Tag II

UbiTrack-TUG2 is a Hybrid UWB-GNSS positioning tag. It integrates UWB positioning and GPS satellite positioning. It can switch between UWB positioning and GPS satellite positioning to ensure accurate and reliable positioning between indoor and outdoor. This tag meets the requirements of full scene positioning.



- Positioning Mode: UWB+GPS
- UWB Operating Frequency: 3.5GHz-6.5GHz
- UWB Transmitting Power: 0-33.5dB(Adjustable)
- GPS Transmitting Power: GPS L1
- Power Supply: Rechargeable 950mAh lithium battery
- Battery Life: 1 week(5min Positioning Frequency)
- NFC Operating Frequency:13. 56MHz
- Dimensions: 4.92"×2.76"×0.27"(125mmx70mmx6.9mm)
- Operating Temperature: -20°C to 55°C
- Operating Humidity: 10-90%
- E-Ink Screen: 1.91"×0.93"(48.55mmx23.71mm)
- Additional Sensors: Acceleration Sensor
- Optional Functions: vibration or voice, SOS,etc.

SIM Operating Frequency: LTE (Cat-M1: B1,B2,B3,B4,B5,B8,B12,B13,B14,B17,B18,B19,B20,B25,B26,B28,B66;Cat-NB1/NB2:B1,B2,B3,B4,B5,B8,B12,B13,B17,B19,B20,B25,B26,B28,B66)



**PART 03**

# **UBITRACK PLATFORM**



# Technical Features

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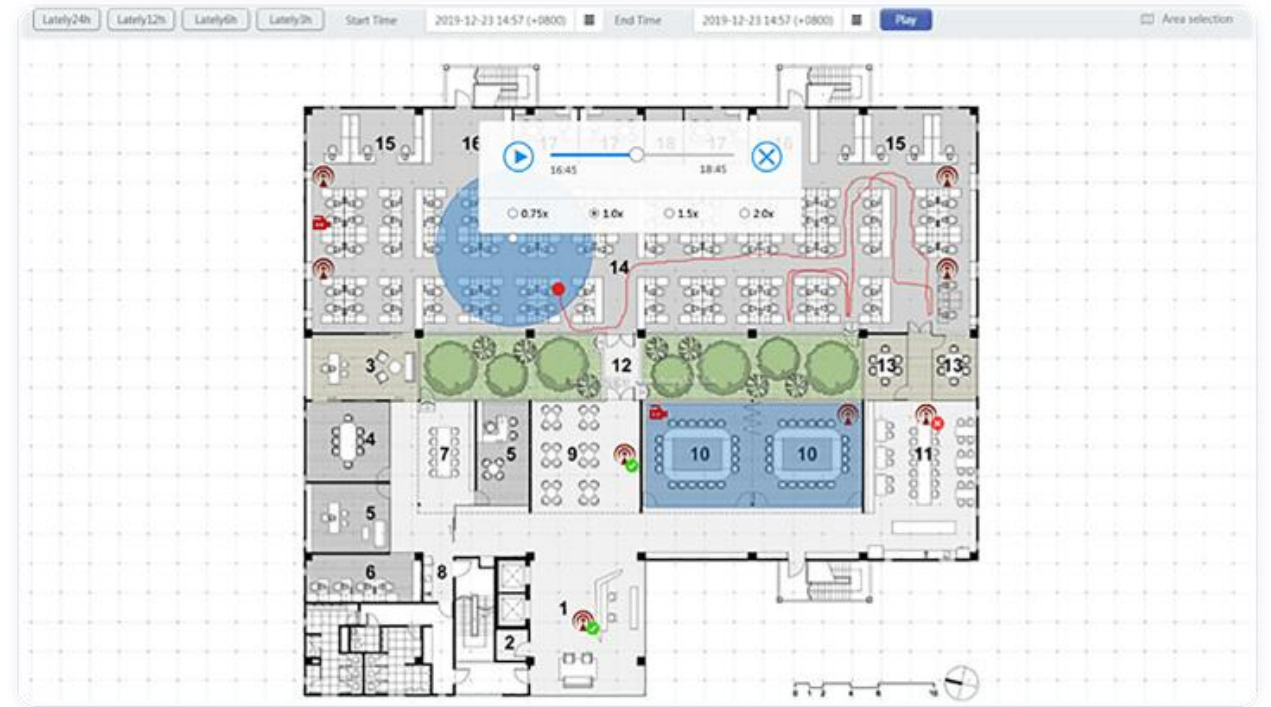
# Accurate display of real-time location



- real-time positioning tracking of any tag
- online and offline tag quantity statistics
- device details display
- monitor video and alarm information display
- map rotation, zooming, full screen display
- Selectable colour scheme for personnel location icons
- Tracking of single/multiple tag movements
- Statistical list finding/filtering/statistics

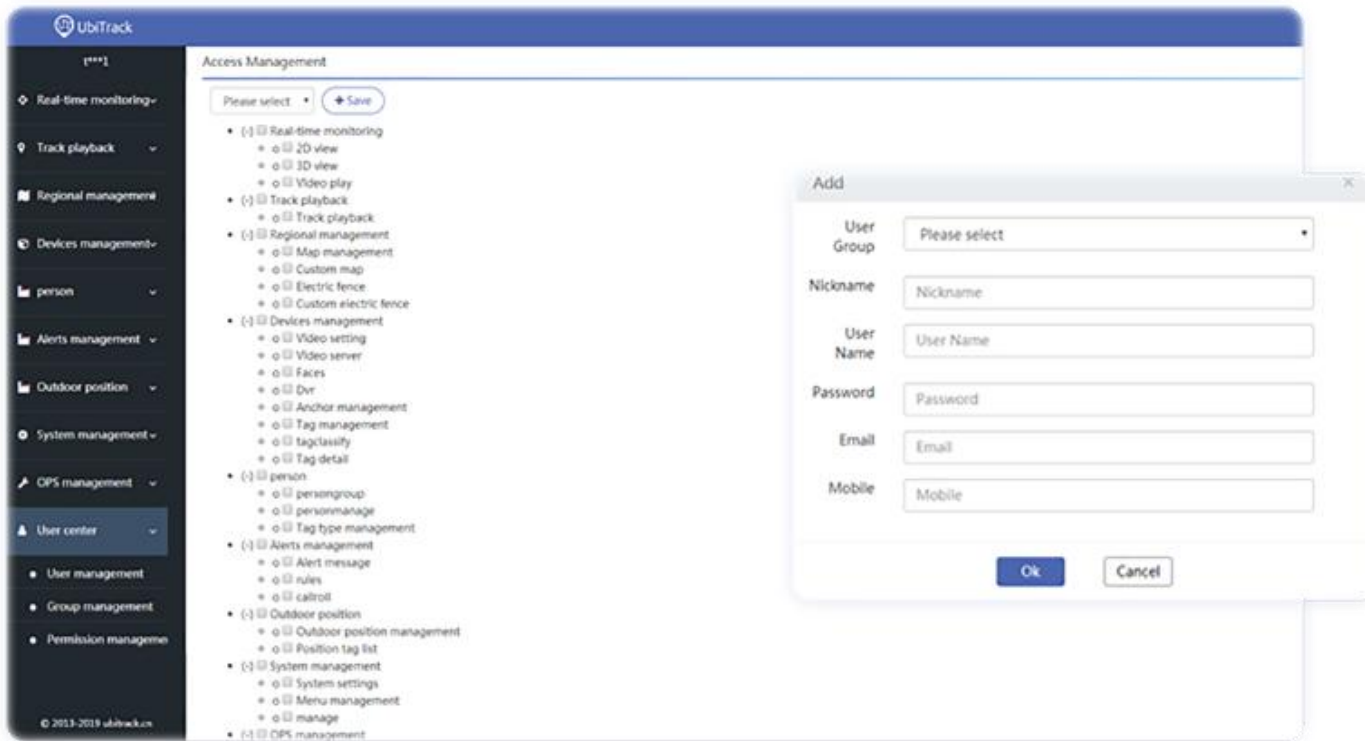
# ▶ Historical track playback

- Flexible filtering of track replay by person, time and area
- Multi-speed track playback for single or multiple tags at any time
- Intelligent filtering without removal of positioning data period
- Provide a basis for incident handling





# Multi-level authority management

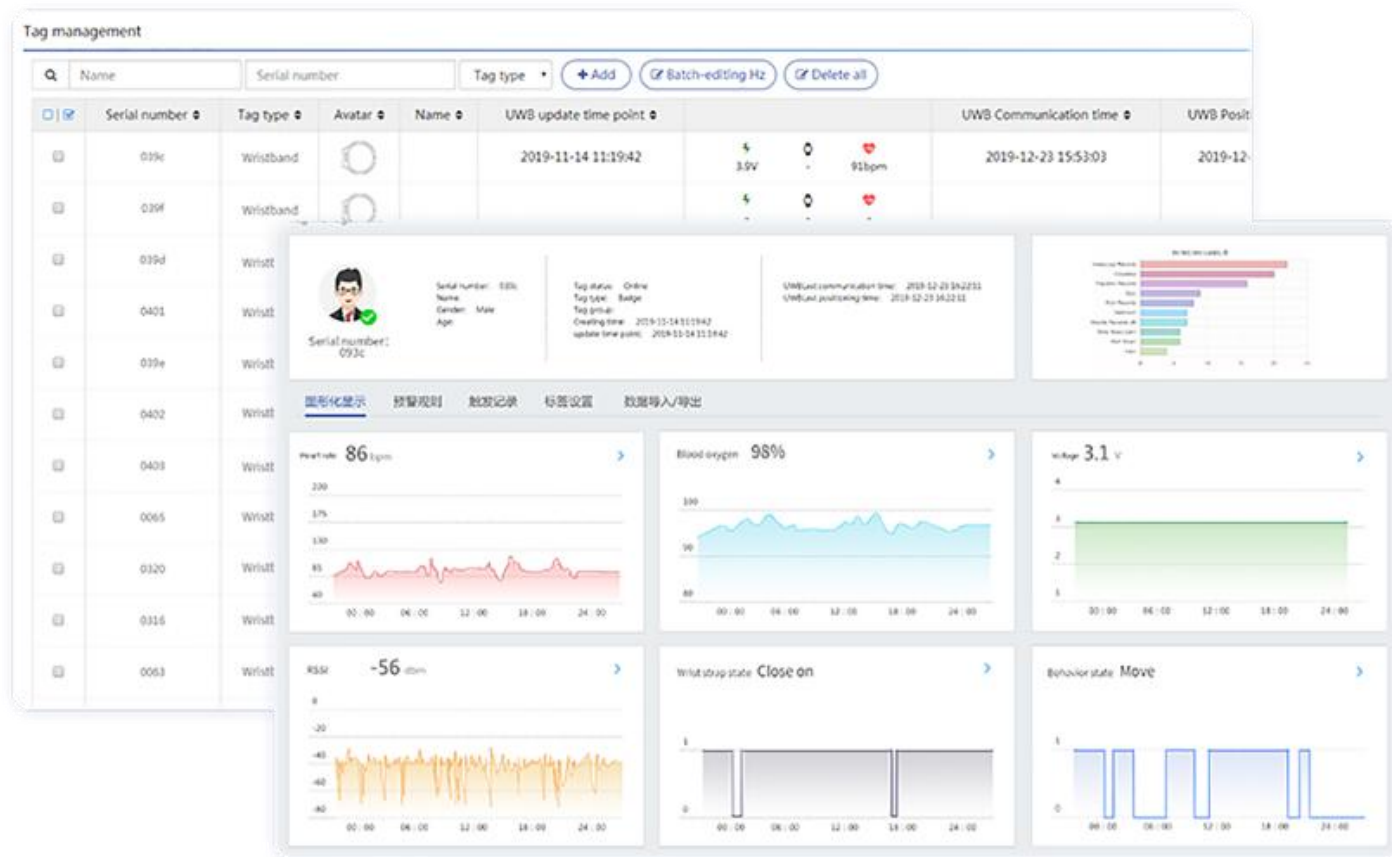


- User management
- User permission setting, module management and function authorization
- User logs record user actions



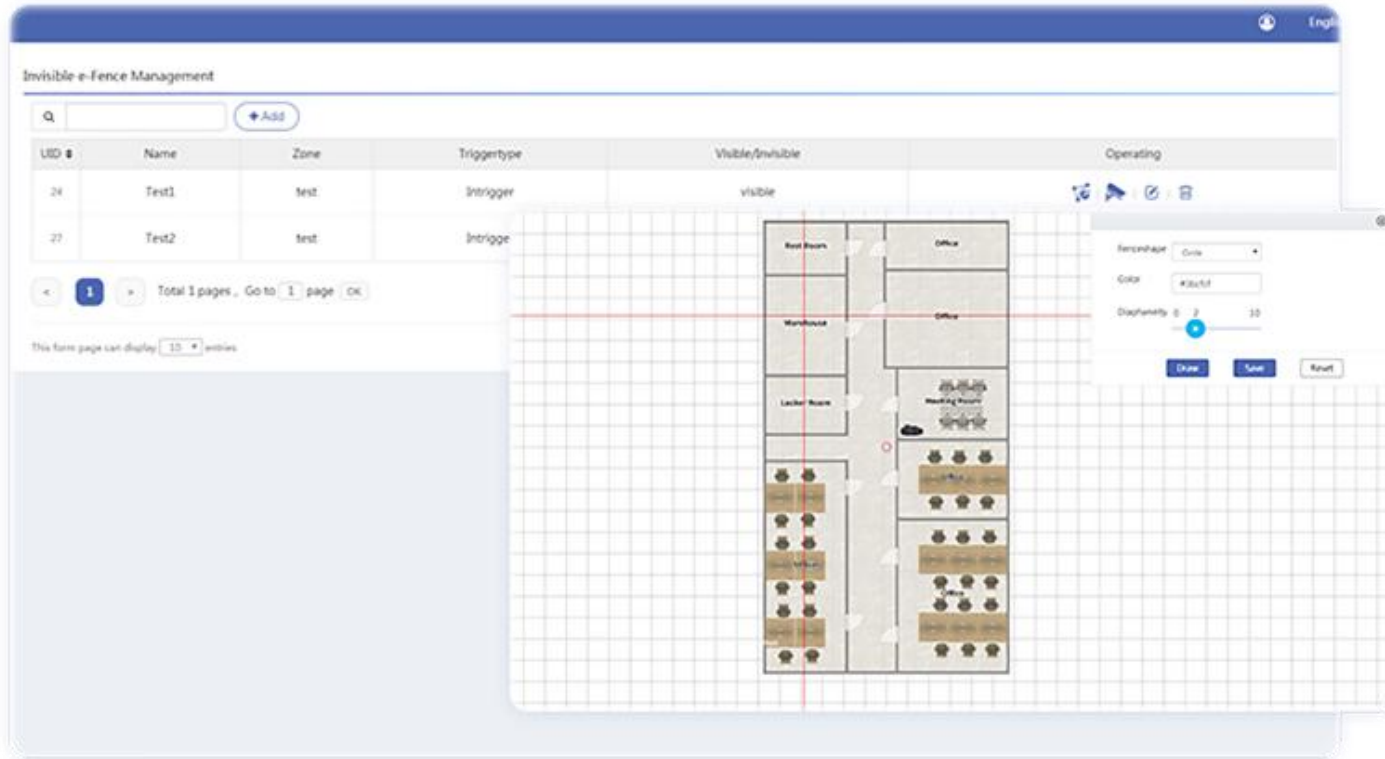
# ▶ Device management

- Monitoring and alert of heart rate and blood oxygen physiological state
- Intuitive presentation of chart form
- Device abnormal data statistics





# Electronic fence, electronic roll call



- Support rectangle, circle, polygon and other shapes of the fence
- Entry/exit fence warning
- Roll call, check actual and expected attendance, automatic attendance
- Data reports are generated automatically



# Electronic fence, electronic roll call

- Surveillance camera streaming media transcoding and access
- Camera preset position and holder setup and operation
- Face recognition for surveillance cameras
- Face and positioning tag match
- Electronic fence is associated with camera preset position





# Open API interface and SDK

### 基础接口

- 上传图片
- 通过区域获取电子围栏
- 获取全部标签
- 批量更新电子围栏
- 保存区域缩放
- 标签日志
- 时区接口
- 串口UDP
- udp队列
- 计算延时
- 获取服务器时间
- 标签分类查询
- 标签分类添加
- 标签分类修改
- 标签分类删除
- 单个基站请求
- 根据标签编号获取标签分类颜色
- 室外定位经纬度数据上传接口
- 室外定位经纬度数据上传接口2
- 室外定位经纬度数据列表查询接口
- 室外定位经纬度数据详细查询接口
- 批量获取标签分类
- 新增摄像头
- 删除摄像头
- 修改摄像头
- 新增摄像头
- 删除摄像头
- 室外定位基础信息查询
- 室外定位基础信息设置
- 用户列表
- 用户添加
- 用户修改

### 错误码规范

code 第1位 ( 错误提示级别 ),第2-3位 ( 错误模块 ),第4-7位 ( 错误代码 )

class	property	code	msg
CodeBase	success	0	操作成功
CodeBase	accessTokenError	1000001	访问Token错误
CodeBase	userTokenError	1000002	用户Token错误
CodeBase	apiUrlError	1000003	接口路径错误
CodeBase	dataSignError	1000004	数据签名错误
Common	passwordError	1010001	登录密码错误
Common	usernameOrPasswordEmpty	1010002	用户名或密码不能为空
Common	registerFail	1010003	注册失败
Common	oldOrNewPassword	1010004	旧密码或新密码不能为空
Common	changePasswordFail	1010005	密码修改失败
Common	accountsAddFail	1010101	添加失败
Common	accountsUpdateFail	1010102	更新失败
Common	accountsDeleteFail	1010103	删除失败
Common	accountsViewFail	1010104	获取失败
Common	zoneAddFail	1020101	添加失败
Common	zoneUpdateFail	1020102	更新失败
Common	zoneDeleteFail	1020103	删除失败
Common	zoneViewFail	1020104	获取失败
Common	cameraAddFail	1080101	添加失败
Common	cameraUpdateFail	1080102	更新失败
Common	cameraDeleteFail	1080103	删除失败
Common	cameraViewFail	1080104	获取失败
Common	tagAddFail	1030101	添加失败
Common	tagUpdateFail	1030102	更新失败
Common	tagDeleteFail	1030103	删除失败
Common	tagViewFail	1030104	获取失败
Common	tagclassifyAddFail	1070101	添加失败
Common	tagclassifyUpdateFail	1070102	更新失败

- Provide API interface, fast data docking
- Provide SDK docking service for efficient integrated development

A light grey world map is centered in the background. Overlaid on the map are several geometric shapes: a large blue triangle pointing right from the bottom left, a blue triangle pointing left from the top right, and a grey diagonal bar crossing the map from the bottom left to the top right.

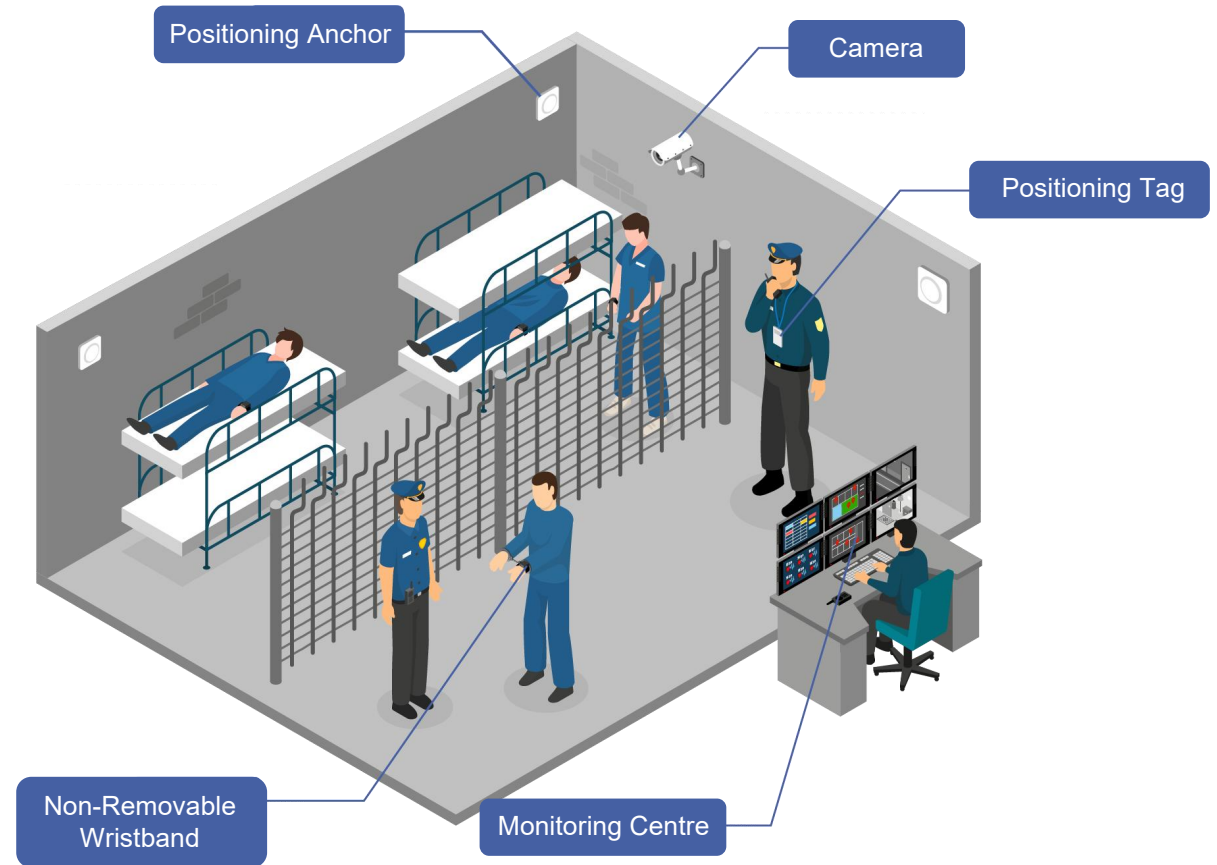
**PART 04**

# **Use Cases**

# Public Security/Judiciary/Prison Solutions

Use UbiTrack' s UWB indoor positioning system to monitor the movement and activities of guards and prisoners within the prison. This positioning system includes Non-Removable Wristband UbiTrack-TWL2 for prisoners and Positioning Badge UbiTrack-TB1 for prison guards. These tracking products display the position of each guard and prisoner in real time, with an accuracy of up to 10 cm (3.93 in). The positioning system also supports linking an electronic fence and camera, as well as setting up no-entry perimeters (electronic fences) around key entrances and exits — when detainees are approaching or entering illegally the set perimeters, an alarm will go off, which will ultimately reduce the risk and danger for supervision staff and law enforcement.

UWB indoor positioning system can also be used in courts and other places where security is of high importance. UbiTrack' s Public Security/Judiciary/Prison positioning solutions support round-the-clock roll-calls and 24-hour position monitoring and automatic tracking of people of interest; the info regarding the location and activity trajectory of all people wearing tracking tags is updated in real time .





# Intelligent Factory Solutions

UbiTrack' s position-tracking system for factories, chemical plants, and similar environments employs a positioning badge. This system supports real-time accurate position display, risk control set-up, camera linkage, historical track playback, personnel management, electronic fence set-up, various behaviour monitoring options, emergency rescue, and other functions. This positioning system helps to realise streamlined management of security issues in the production process, and also realise intelligent maintenance and management of production equipment and employees.

- **Real-Time Positioning**

Real-time personnel location tracking and relevant statistics, personnel distribution heat map.

- **Electronic Fence**

A static or dynamic electronic fence can be set to establish effective management of access to the specific area, the alarm connected to the electronic fence will be triggered when unauthorized personnel enter the perimeter.

- **Behaviour Detection**

With our positioning system, you can conduct efficient monitoring of your personnel' s activity and behaviour.





# Intelligent Construction Site Solutions

UbiTrack's position-tracking system for construction sites employs a positioning badge. A positioning wristband is also available. This system supports real-time accurate position display, static and dynamic electronic fence set-up, alarm that goes off in case people enter the dangerous area, personnel behaviour monitoring, effective prevention of safety accidents.

- **Real-time Positioning**

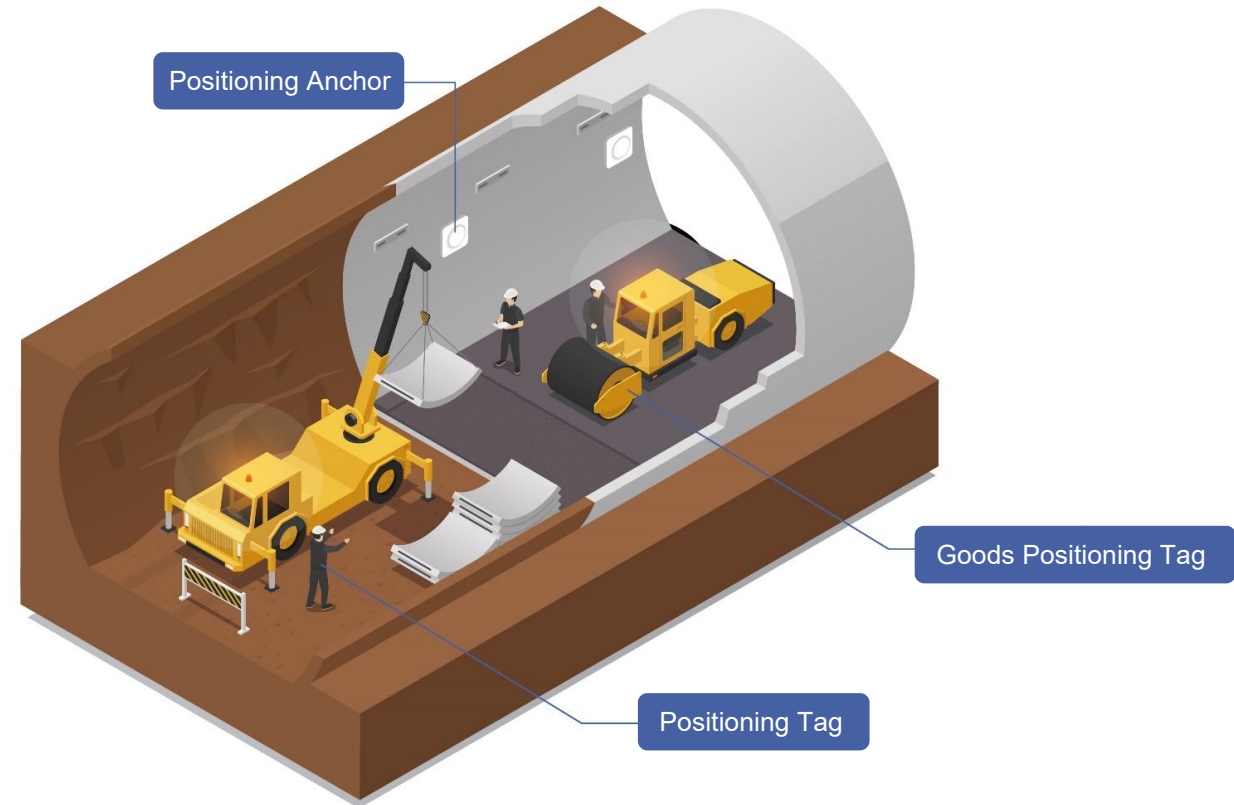
Real-time personnel position tracking, keep abreast of on-site personnel dynamics, view personnel location and distribution map.

- **Electronic Fence**

Set up an electronic fence to control and limit access to dangerous areas, set the forklift safety distance range, effectively prevent accidents.

- **Open API**

Deploy Outdoor Positioning Anchor UbiTrack-A2 to automatically record information of construction personnel entering and leaving the site. Achieve unified management of platform data through the API interface, docking site hours statistical software, attendance software, and other useful tools.





# Hospital/Nursing Home Solutions

UbiTrack' s position-tracking system for hospitals and nursing homes employs a positioning badge,. A positioning wristband is also available. This system supports real-time accurate position display and intelligent monitoring of staff and other people of interest, which allows for a timely response to emergency situations and ensures the safety of all people inside or around the building.

- **Real-Time Positioning**

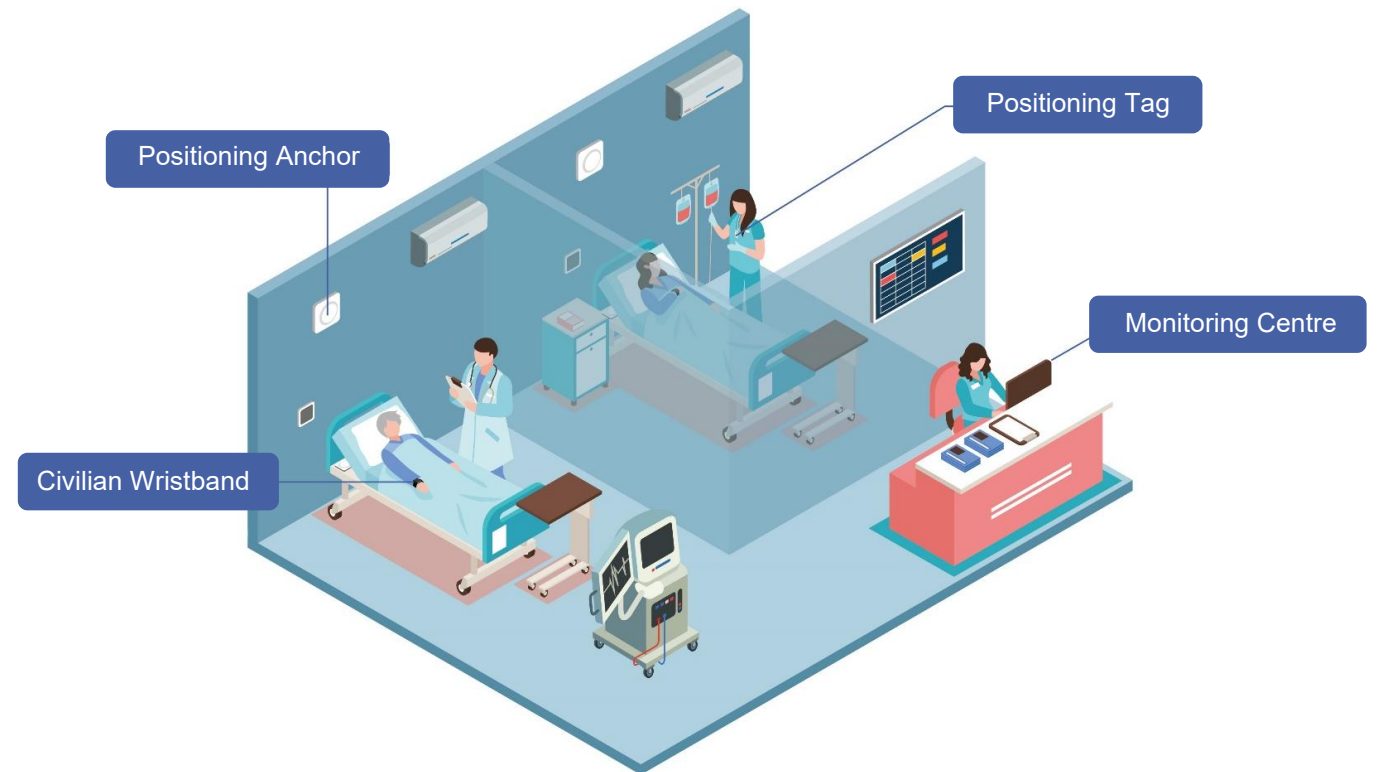
Real-time personnel/patient location tracking anywhere, anytime, with relevant statistics, personnel distribution heat map, allowing you to grasp the personnel/patient dynamics and ensure their safety.

- **Camera Linkage**

High-speed camera linkage, full-range monitoring of patients and personnel.

- **Health Monitoring**

UbiTrack-TWC1 for the elderly or patients can be used to implement health monitoring, including heart-rate monitoring, activity intensity monitoring, and SOS one-click alarm t.



# Server Room Solutions

UbiTrack's position-tracking system for server rooms employs a positioning badge, a positioning wristband is also available. This system supports real-time accurate position display and intelligent monitoring of staff and other people of interest, which allows for a timely response to emergency situations.

- **Real-Time Positioning**

Real-time personnel location tracking and relevant statistics, effective management of personnel through the supervision of employee behaviour.

- **Camera Linkage**

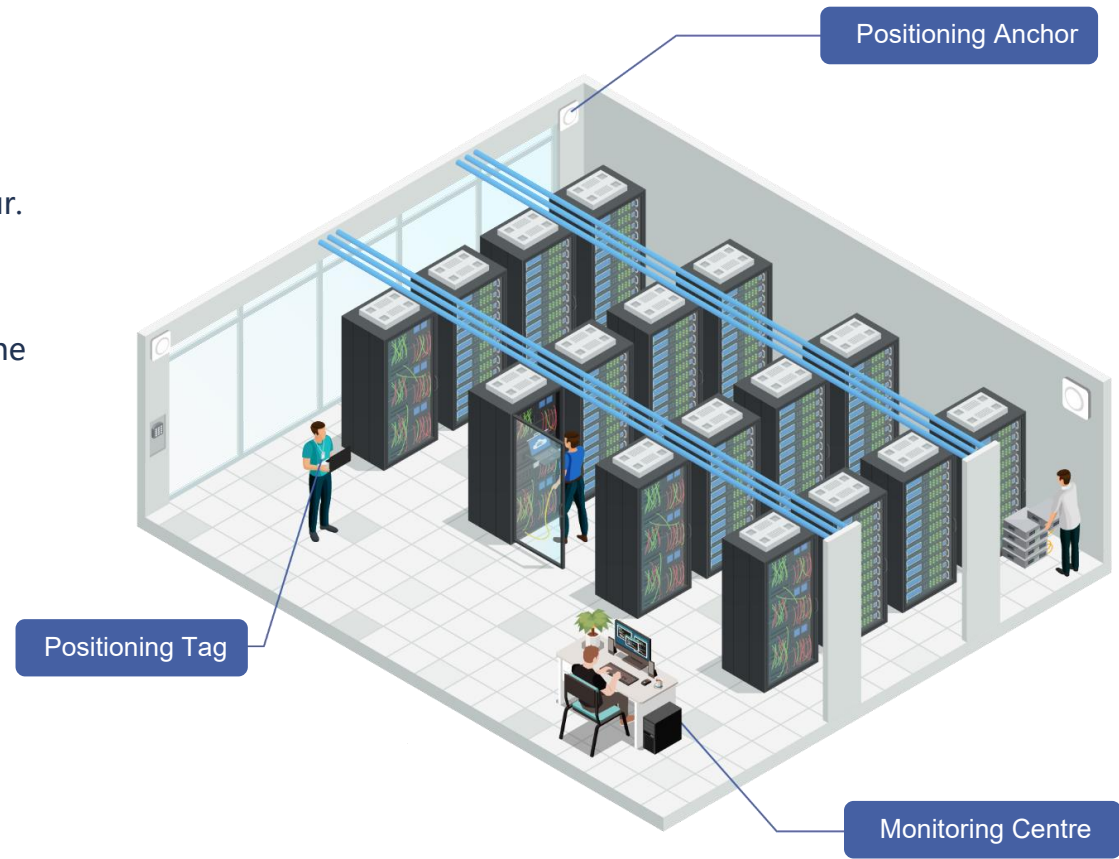
High-speed camera linkage, video tracking of people inside and around the server room.

- **Electronic Fence**

A static or dynamic electronic fence can be set to establish effective management of access to the specific area.

- **Track Playback**

Store the trajectory of personnel to provide the decision-making basis for event processing.



A light grey world map is centered in the background. Overlaid on the map are several geometric shapes: a large blue triangle pointing right from the left edge, a grey triangle pointing left from the left edge, and a blue triangle pointing down from the top right corner. The text is centered over the map.

**PART 05**

# **ADVANCED SERVICES**

# Track Data Analysis

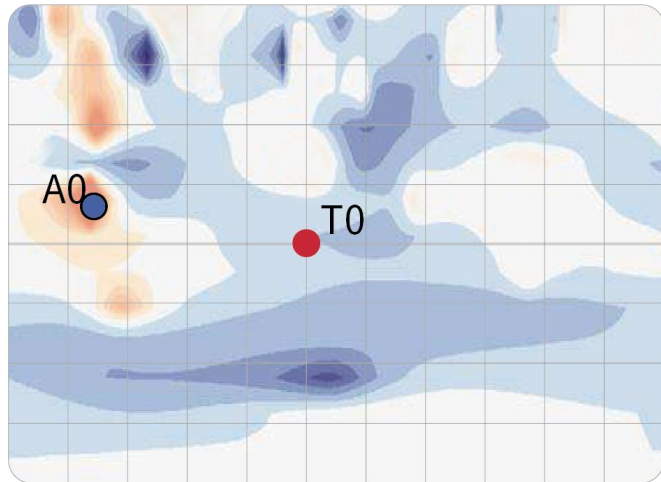
As the installed UWB positioning system matures, more and more data regarding trajectory location and positioning information will be generated. Starting from the spatial and temporal attributes of location data, UbiTrack uses time series analysis and location data partitioning technology to divide the trajectory data into patterns, providing customers with trajectory data analysis services and with visual presentation of the results of the analysed trajectory data.



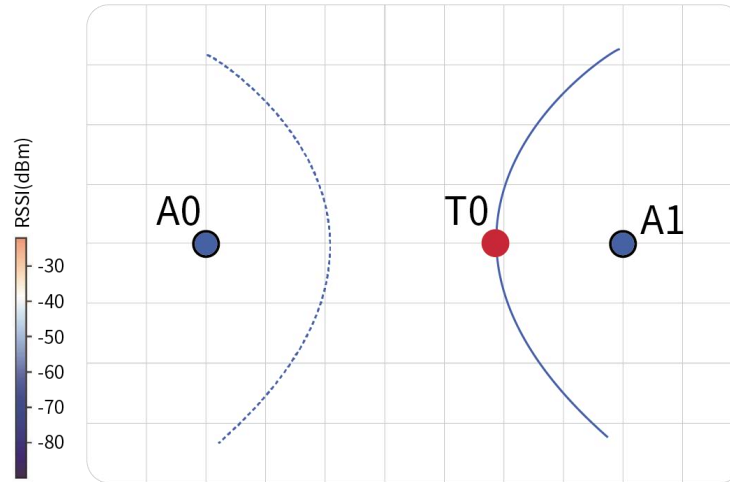


# Positioning algorithm support

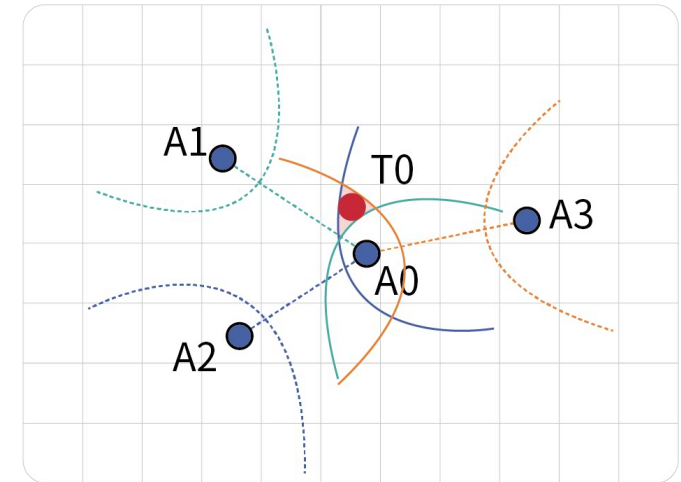
At present, the most commonly used positioning algorithms are: time difference positioning technology, signal arrival angle measurement (AOA) technology, time of arrival positioning (TOA) and time difference of arrival positioning (TDOA). Among them, TDOA technology is the most popular scheme at present. In addition to the GSM system, it is also widely used in other systems such as AMPS and CDMA — UWB positioning adopts this technology. UWB positioning system can also provide 3D positioning function. This positioning system adopts TDOA and AOA positioning algorithms to cope with complex and diverse market demand and user scenarios. UbiTrack supports TDOA and AOA positioning algorithms, and provides multiple hybrid algorithms. UbiTrack's technology has the advantages of higher precision, lower power consumption, and stronger anti-interference, which ensures meeting different positioning needs of system integrators and end users.



0-dimensional existence positioning



1-dimensional positioning



2-dimensional positioning





# THANKS

