RTTR

UWB based indoor / outdoor real-time location system and access control

http://rtls-labs.minlarc.com/

Product / Service description

RTTR is hardware and software platform for object and/or people real-time tracking with wide customization and integration capabilities.

RTTR provides:

- High precision indoor and outdoor tracking in 2D and 3D space
- Proximity and precise location modes of operation
- Best in class triangulation location solver with cm precision
- Biometric proximity or location based access control
- Geofencing
- Multiple wearable devices (tags) types
- Bi-directional messaging with wearable devices (tags)

System components

Anchors – stationary devices with known location

Tags – moving devices

Location solver – server based software that converts data received from anchors into tag precise location (in GPS or XYZ coordinates). We use unique "syncless" TDoA location computation approach that does not require entire anchor system to be time synchronized that gives more flexibility in anchor installation and less anchors to cover the same area.

Command center – application specific software for tags personalization, biometric enrollment, display real-time tags location in 2D/3D map, etc.

Anchor

Anchor is constantly powered stationary device with known fixed coordinates.

Specs:

- Size (mm): 110x150x20
- Ultra-wideband receiver at 3 - 6 GHz
- In-house designed UWB long-range wide-angle antenna
- 2.4 GHz Wi-Fi
- Battery for main power backup
- Ethernet (PoE) – optional
- 5V / 12V / 110V / 220V power supply options

Multiple tags options
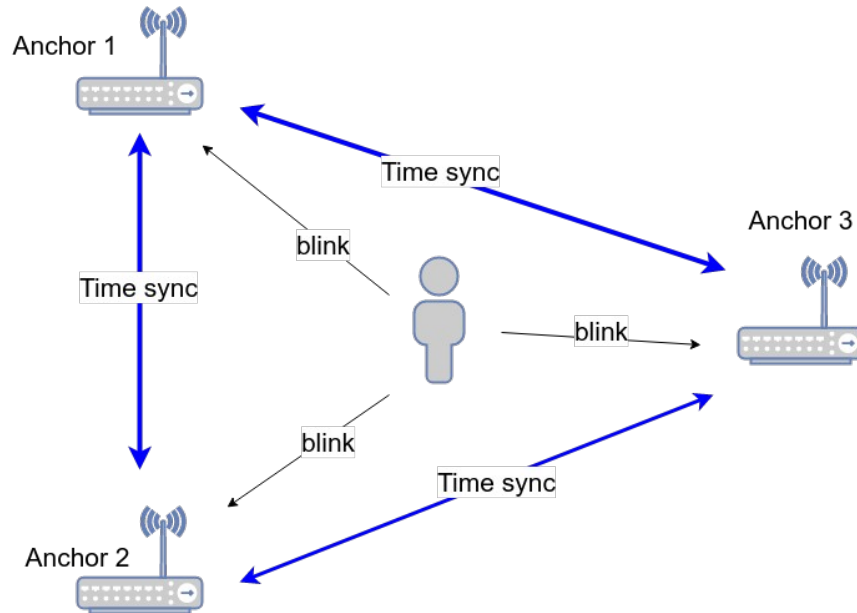
Biometric keyfobs

Wristbands

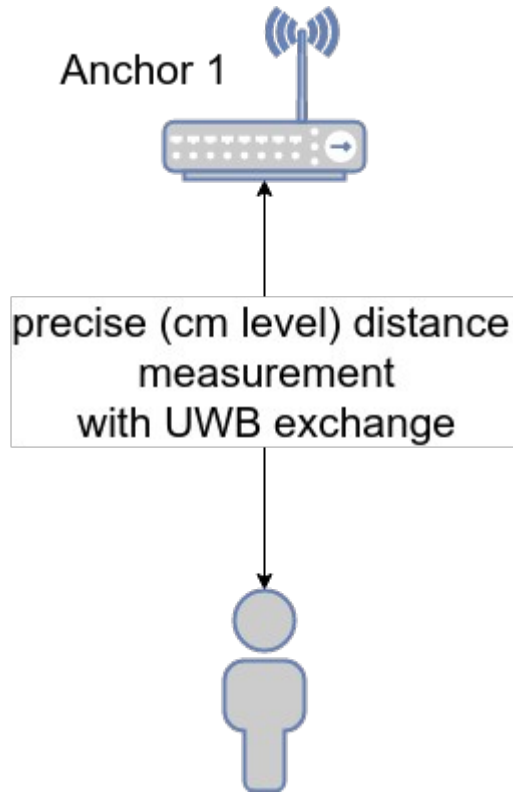Lanyards

Location. Operation principles.

1. Anchors are installed in predefined fixed locations on site and powered from constant power supply. Every anchor needs to "see" (be in line of sight) with at least one another anchor. At least 3 anchors required to get precise tag location in 2D space and 4 anchors for 3D space.
2. Moving tags emit short blink messages at predefined frequency (normally once every second). These messages received by anchors and forwarded to location solver.
3. Location solver computes tag coordinate with high precision for every blink and routes this data to command center for visualization and further processing.

Location. Installation example.

Proximity. Operation principles.

Anchor 1

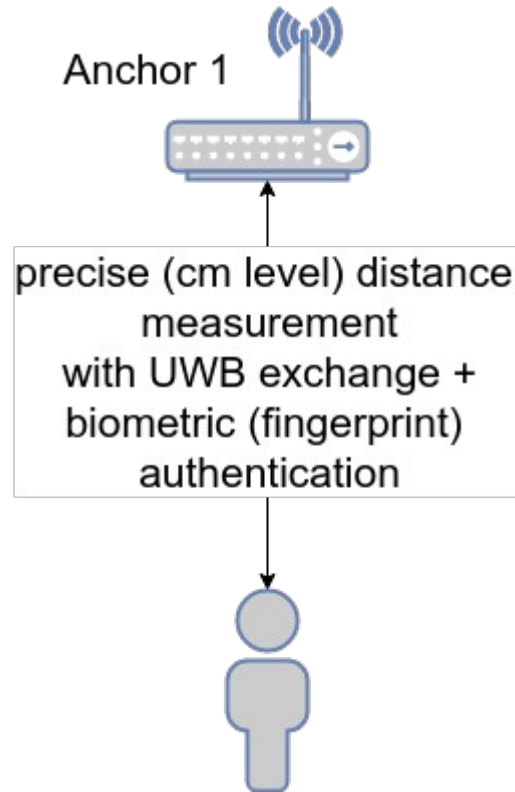precise (cm level) distance
measurement
with UWB exchange

1. Anchors are installed in predefined fixed locations on site and powered from constant power supply.
2. Moving tags initiate the UWB distance measurement process. Once its done anchor knows the distance to the tag.
3. Anchor deliver distance information to the location solver that sends this data to the command center for further processing and visualization.

Proximity. Installation example.

Access control. Operation principles.

Anchor 1

precise (cm level) distance measurement
with UWB exchange +
biometric (fingerprint)
authentication

1. Anchors are installed in predefined fixed locations on site and powered from constant power supply.
2. Tag owner scans the finger on the fingerprint sensor (that is part of the tag).
3. Tag delivers fingerprint data over UWB to the anchor. At the same time anchor measure the distance to the tag.
4. Anchor sends fingerprint and distance data to location solver and command center.
5. If Owner is allowed to access the restricted area open/close message is sent to the door lock controller or any other access control mechanism.