



Accuware Visual Positioning System

Accuware Visual Positioning System (VPS) enables mobile devices to determine their location in a venue, in real time, in 3 dimensions, by processing the video signals captured by their cameras.

Features

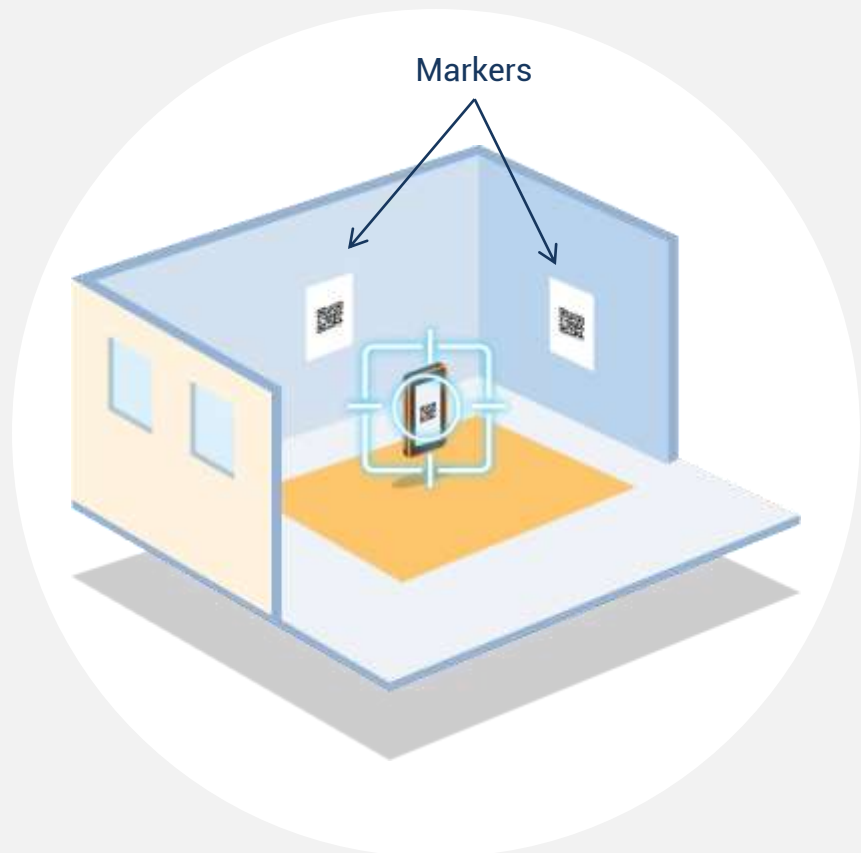
- Device location is computed client-side by VPS software
- Location is provided as **latitude, longitude, altitude** (off the floor) and **level** (ex. first floor, second floor, basement)
- Average location accuracy: 10 cm / 4 inches
- A venue may be indoors, outdoors or a mix of both
- Device location is determined in reference to location **Markers** placed around the venue
- Locations may be determined in darkness if the camera is equipped for night vision

How it works

- Device location is computed client-side by Accuware VPS software
- Locations are determined in reference to **Markers** placed around the venue, using the angle of view from the device to a Marker to estimate its position
- Marker images are generated via Accuware's **Dashboard**. Each image encodes a specific 3-D location
- Marker images are affixed (ex. printed, etched, painted, etc.) to flat objects (ex. paper, tile, tag, sticker, tape, etc.)
- Markers are physically placed indoors or outdoors throughout a venue during the **Site Setup** process

Components

- **Markers** deployed through a venue, are graphical images that identify a specific 3-dimensional location in the venue
- Mobile devices fitted with cameras, able to capture Markers' images for interpretation
- Accuware's client-side software to compute a device's location
- Accuware's online **Dashboard** to manage a site's data and generate Marker images
- A wireless network at the site, to enable clients to communicate with the server





Sample applications

- **Indoor positioning:** smartphone displays its location, including distance off the floor throughout a venue
- **Warehouse management:** autonomous mobile robots can determine their location in a facility, including under lights-out conditions. Robots and lift trucks automatically record inventory locations as items are placed on racks. Drones navigate indoors to perform inspections and/or tasks that require visual identification
- **Security:** Autonomous mobile patrol robots may issue alerts and record video annotated by accurate locations
- **Retail:** Autonomous mobile robots inside large stores assist customers with accurate knowledge of their own location and that of items anywhere in the store

Getting started

Markers are placed throughout the venue at specific locations whose coordinates are encoded in the Marker. The process is referred to as **Site Setup**:

1. One or more floor plans of the venue must be uploaded for each level via the Dashboard.
2. Locations for Marker placement are indicated on the floor plans.
3. Marker images are generated and placed at each pre-determined location.
4. If placed on vertical surfaces, images are set with their top edge level at a given height.
5. If placed on the floor or ceiling, the image's top edge must be aligned in a North-South direction using a compass
6. Positioning accuracy is verified by moving through the venue running a **VPS app**

Done.



Video cameras

- Device cameras must be of medium or high resolution
- Unless cameras are equipped for night vision, adequate lighting should be available in the venue
- Device must run the VPS software



License

Two options:

1. By subscription to a public cloud-based service
2. Standalone installation

Pricing

Based on the number of devices used. Two options:

1. Monthly fee
2. Discount with 1 year pre-payment

Contact us or see our current Price List.

Most common FAQs

VPS operation requires

- Adequate lighting throughout venue
- Internet connectivity for public cloud-based systems
- Cameras' video output is fed to VPS software



Markers must be placed...

- According to the orientation specified during Site Setup
- At the pre-specified height
- When placed on vertical surfaces, top edge must be correctly level

Lights-out operation

- Cameras must be suitable for night vision
- Camera resolution must meet VPS requirements

