ALM System Training

Sensor Operation Guide
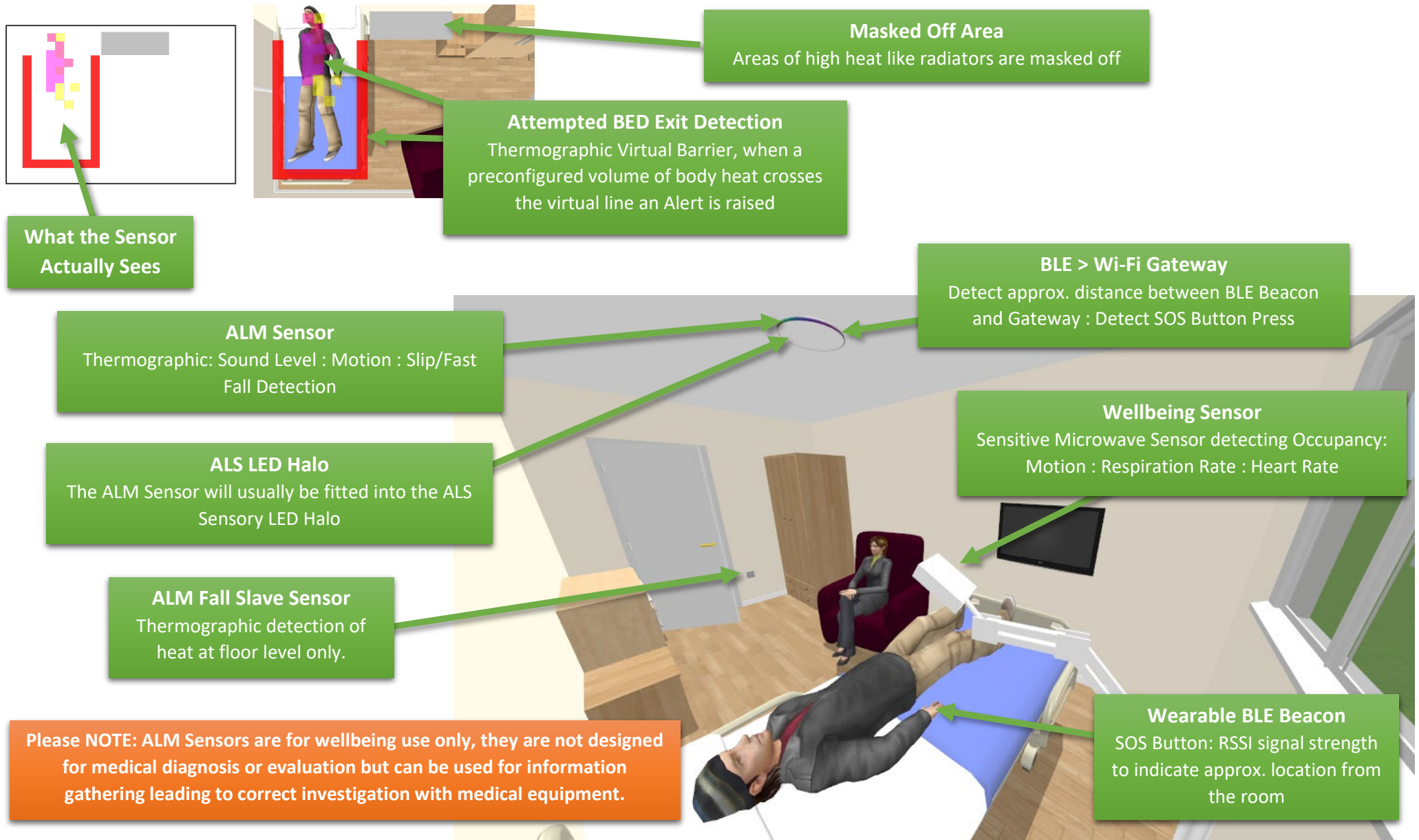
MyQOL
My Quality Of Life

ALM System Sensor Operation Guide

▶ ALM stands for 'Assisted Living Monitoring'.

▶ EM stands for 'Elderly Monitoring'.

▶ As many of the ALM locations are 'Assisted Living' and not 'Controlled Living' residents are free to move about the apartment at will.

▶ They can engage in normal every day activities and activities that may not be normal or what adults would consider normal. They can walk, dance, jump about if they so wish. Attend the bathroom (with or without assistance), get something to eat, put on music, tv or paly games go to bed for a nap or lounge on the settee…

▶ The apartment is considered the resident's personal space.

▶ The challenge was providing a system to monitor residents with privacy & dignity and without the use of traditional CCTV.

▶ MyQOL's solution to this problem is a multi-sensor array device, strategically placed in residents' apartments and rooms.

▶ The ALM System Sensors employ:

    ▶ Thermographic Sensors

    ▶ Sound Level Processing

    ▶ Doppler and FMCW Microwave sensors.

    ▶ BLE SOS and basic Tracking wearable devices. *(Where required)*

    ▶ Communication & GPS Wearable Devices. *(Where required)*

    ▶ AUX Inputs & outputs from other sensors or devices. *(Where required)*

Each monitored room will usually have both ALM sensors + Sensory LED Halo depending on requirements and specification.

Respiration Rate and or Respiration + Heart Rate 'Wellbeing Sensor' will be supplied depending on requirements and specification.
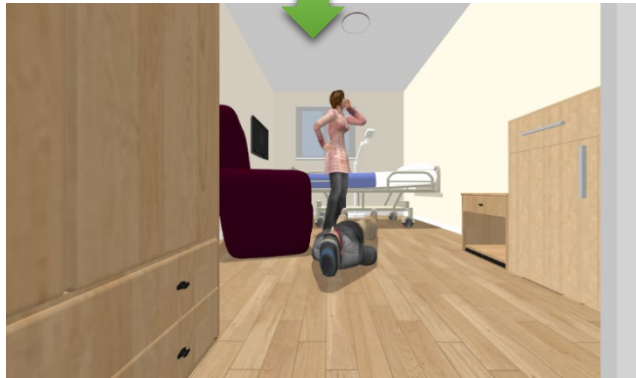
What the Sensor Actually Sees

Masked Off Area
Areas of high heat like radiators are masked off

Attempted BED Exit Detection
Thermographic Virtual Barrier, when a preconfigured volume of body heat crosses the virtual line an Alert is raised

BLE > Wi-Fi Gateway
Detect approx. distance between BLE Beacon and Gateway : Detect SOS Button Press

ALM Sensor
Thermographic: Sound Level : Motion : Slip/Fast Fall Detection

Wellbeing Sensor
Sensitive Microwave Sensor detecting Occupancy: Motion : Respiration Rate : Heart Rate

ALS LED Halo
The ALM Sensor will usually be fitted into the ALS Sensory LED Halo

ALM Fall Slave Sensor
Thermographic detection of heat at floor level only.

Wearable BLE Beacon
SOS Button: RSSI signal strength to indicate approx. location from the room

Please NOTE: ALM Sensors are for wellbeing use only, they are not designed for medical diagnosis or evaluation but can be used for information gathering leading to correct investigation with medical equipment.

Low Level Falls Sensor (Body Heat at Floor Level)
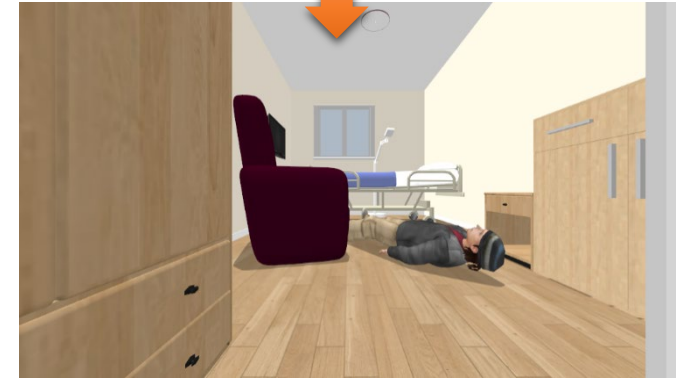
Not an Alert Condition	Not an Alert Condition	Alert Condition

Apparent body heat above and below detection zone Will not Raise Alert

**The sensor detects a specific volume of apparent body heat at low level only and raises an alert**

Please NOTE: Other large everyday heated objects like space heaters or hot food trolleys or warm bucket of water/cleaning fluid can raise alerts.

Ceiling Level Falls Sensor

The ceiling level falls sensor detects a fast fall or slip fall.

Not a sliding fall, slump fall or slow controlled slip off a bed or chair.

The sensor works by detecting the speed of a human body falling or 'Dropping away' from the sensors ceiling position.

As a person's body falls away from the sensor, the sensor detects the speed and determines a possible Fall Events
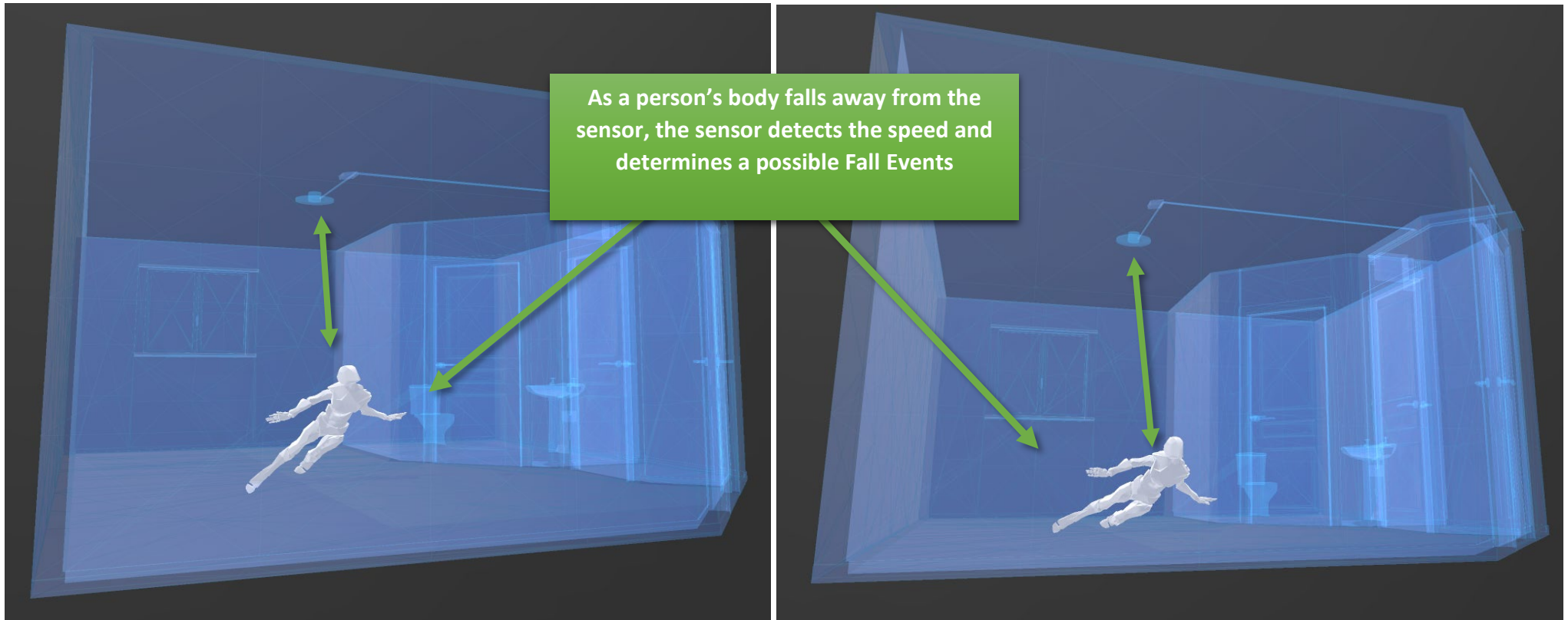
Please NOTE: Fast Moving Residents or Staff can Trigger a Possible Fall Event Alert...

Wellbeing Sensor.

The wellbeing sensor can be used with residents/patients in the bed or sat on a chair.

The sensor can detect occupation, movement, approximate heart rate and approximate respiration rate. For use as information that can lead to further investigation.
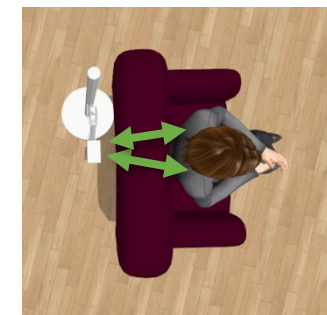
When used with a bed, the sensor can be placed anywhere around the top half of the bed as long as the sensor head is no further away than 1.8 meters, for best results it should be as close as the resident/patient feels comfortable with and won't be knocked.

The sensor head should be directed towards the resident's torso/chest area.

When used with a chair the sensor can be placed behind the chair provided the chair is not made of metal.
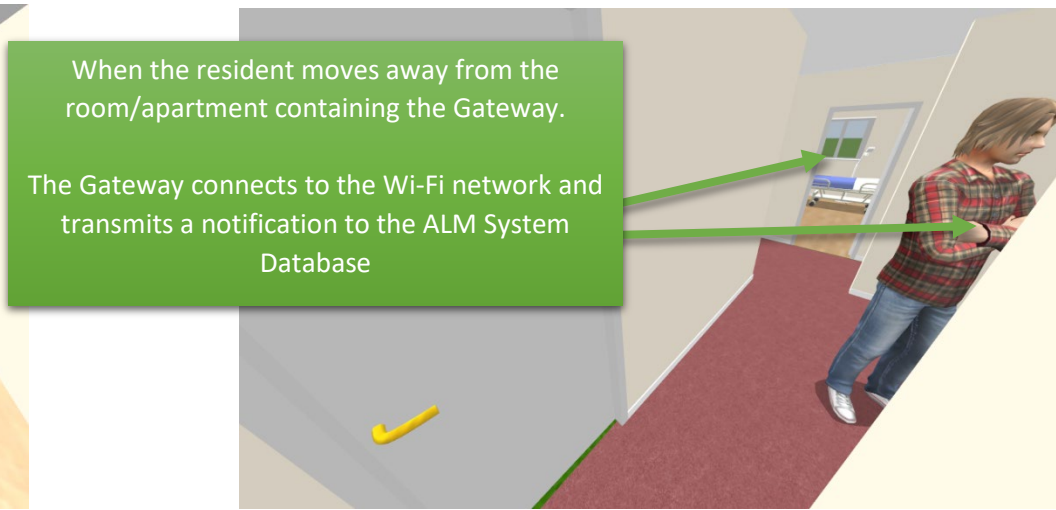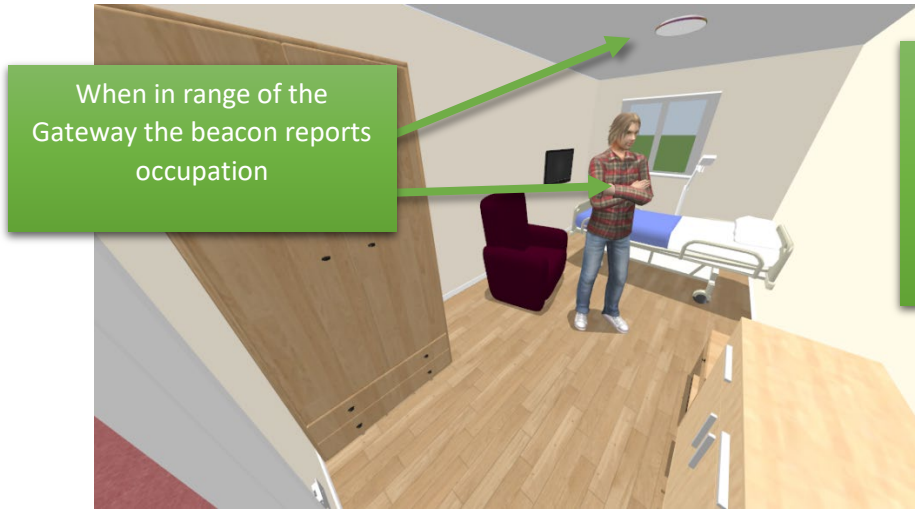
Senor placement should be closer than with a bed due to signal traveling through the chair material, depending on the chair type and manufacture this can be quite dense.

Less than 1.8 meters for the best results
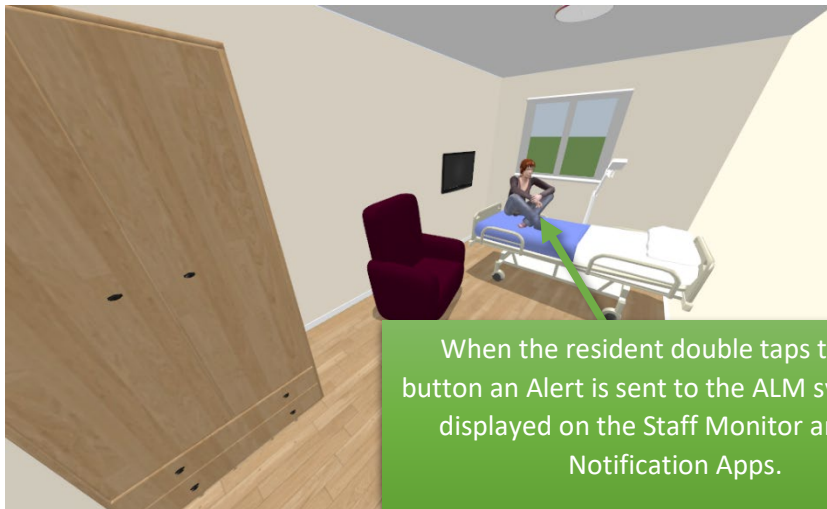
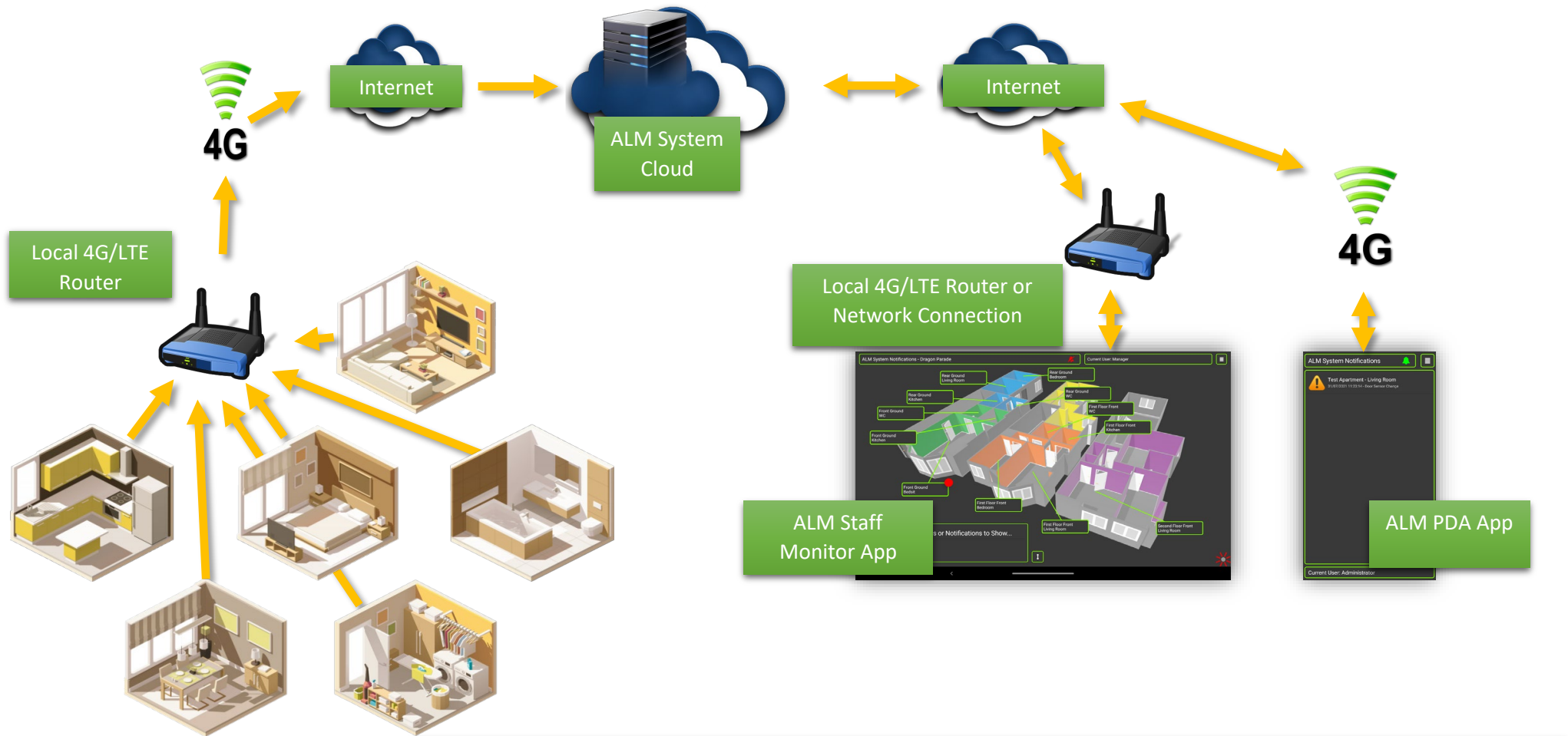**Please NOTE The Wellbeing Sensor is not designed for medical diagnosis or evaluation but can be used for information gathering leading to correct investigation with medical equipment.**

Less than 1 meter for the best results

BLE Wearable

Basic Tracking Method

When in range of the Gateway the beacon reports occupation

When the resident moves away from the room/apartment containing the Gateway.

The Gateway connects to the Wi-Fi network and transmits a notification to the ALM System Database

SOS Operation Button Operation.

When the resident double taps the SOS button an Alert is sent to the ALM system and displayed on the Staff Monitor and PDA Notification Apps.

ALM & EM Systems IoT (internet of things).

Internet

ALM System Cloud

Internet

4G

Local 4G/LTE Router

Local 4G/LTE Router or Network Connection
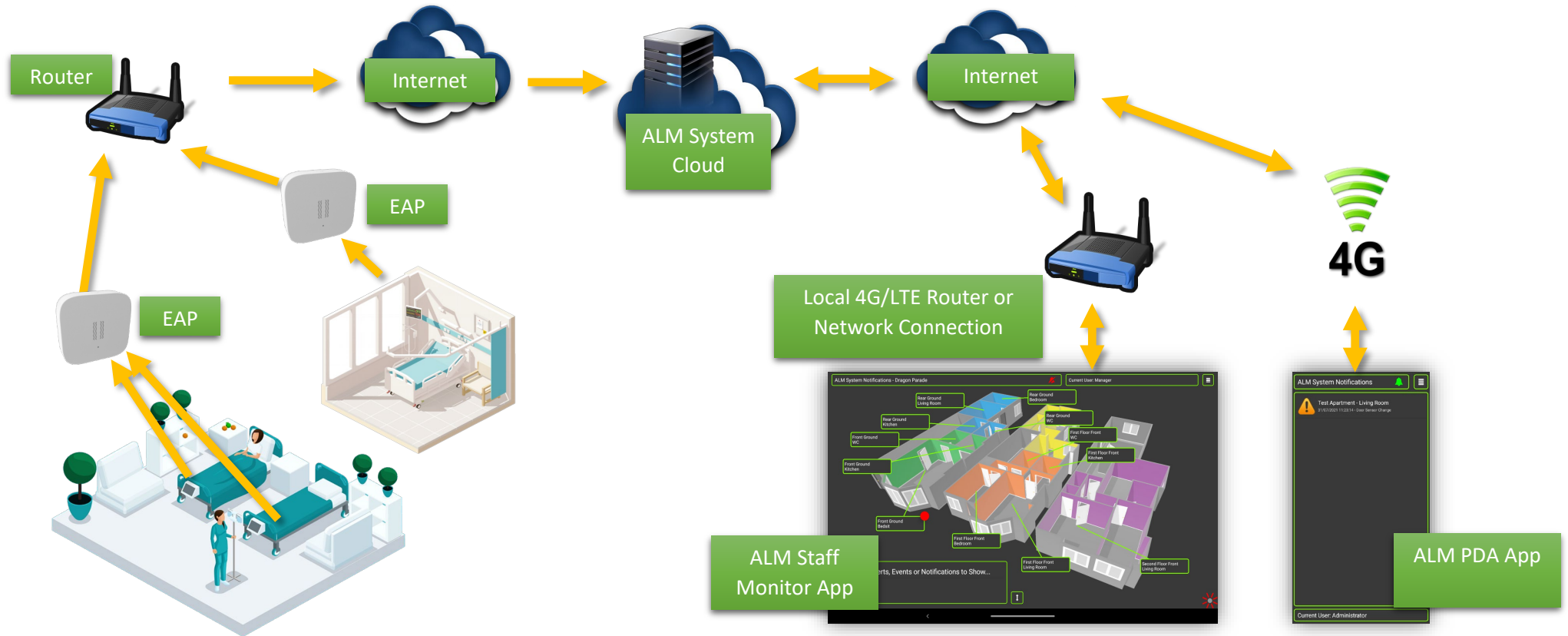
ALM Staff Monitor App

ALM PDA App

4G

ALM System Network Topography

When Operating in Residential Assisted Living or Elderly Monitoring, all apartment sensors connect to the local router and forward all sensor data to the ALM Cloud Server usually via 4G connection. Data is then requested by the staff monitor and PDA that uses any reliable internet connection Wi-Fi or 4G.
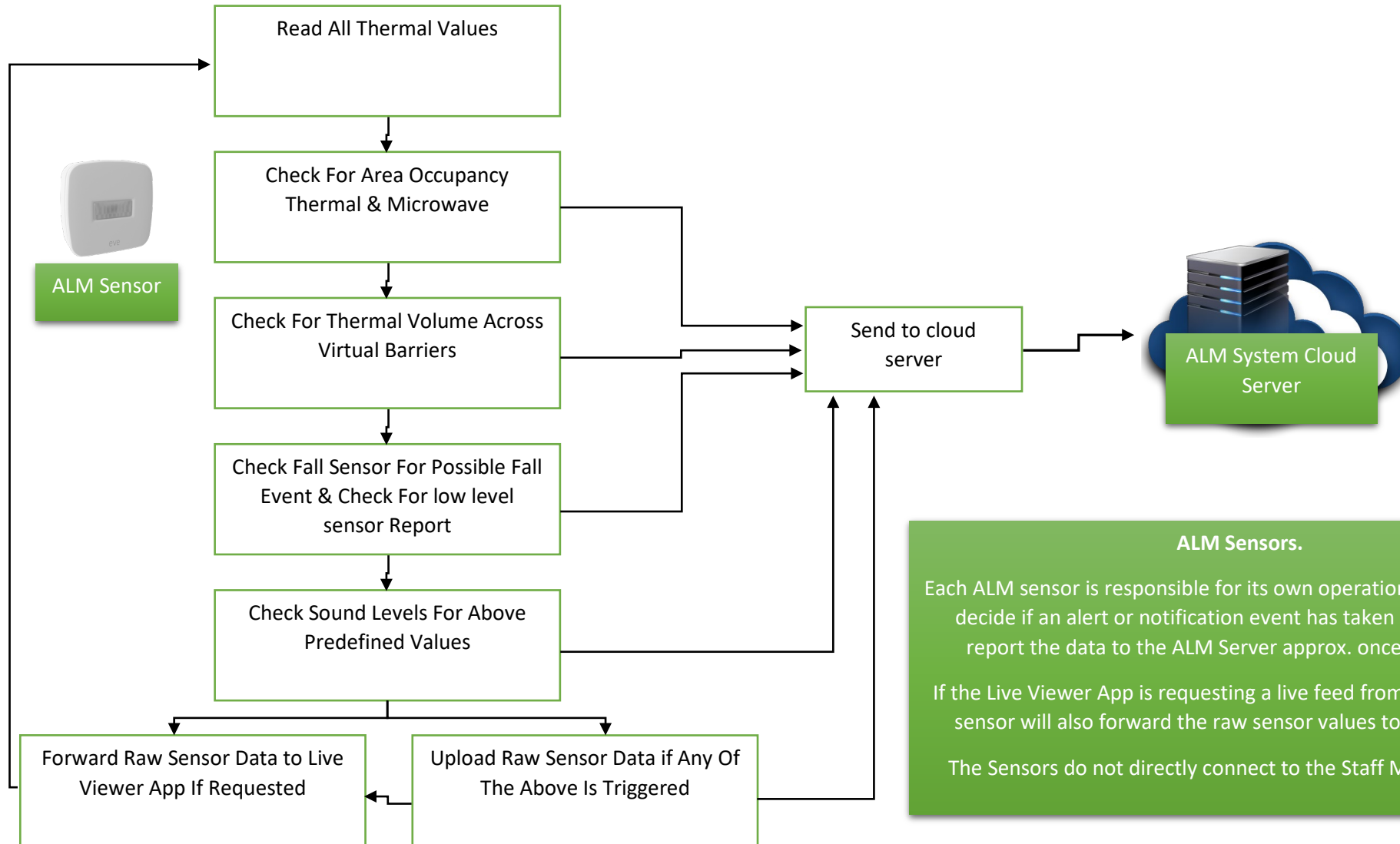
ALM & EM Systems IoT (internet of things).

Router

Internet

ALM System Cloud

Internet

EAP

EAP

Local 4G/LTE Router or Network Connection

4G

ALM Staff Monitor App

ALM PDA App

ALM System Network Topography

When Operating in Hospitals or Care Homes, all ALM sensors may connect to an EAP before the router and then forward all sensor data to the ALM Cloud Server.

Data is then requested by the staff monitor and PDA's that uses any reliable internet connection Wi-Fi or 4G.

ALM & EM Systems Sensor Processing

```
Read All Thermal Values
```

ALM Sensor

```
Check For Area Occupancy
Thermal & Microwave
```

```
Check For Thermal Volume Across
Virtual Barriers
```

```
Send to cloud
server
```

ALM System Cloud Server

```
Check Fall Sensor For Possible Fall
Event & Check For low level
sensor Report
```

```
Check Sound Levels For Above
Predefined Values
```

```
Forward Raw Sensor Data to Live
Viewer App If Requested
```

```
Upload Raw Sensor Data if Any Of
The Above Is Triggered
```

ALM Sensors.

Each ALM sensor is responsible for its own operation. The sensor will decide if an alert or notification event has taken place and will report the data to the ALM Server approx. once per second.

If the Live Viewer App is requesting a live feed from the sensor, the sensor will also forward the raw sensor values to the PDA app.
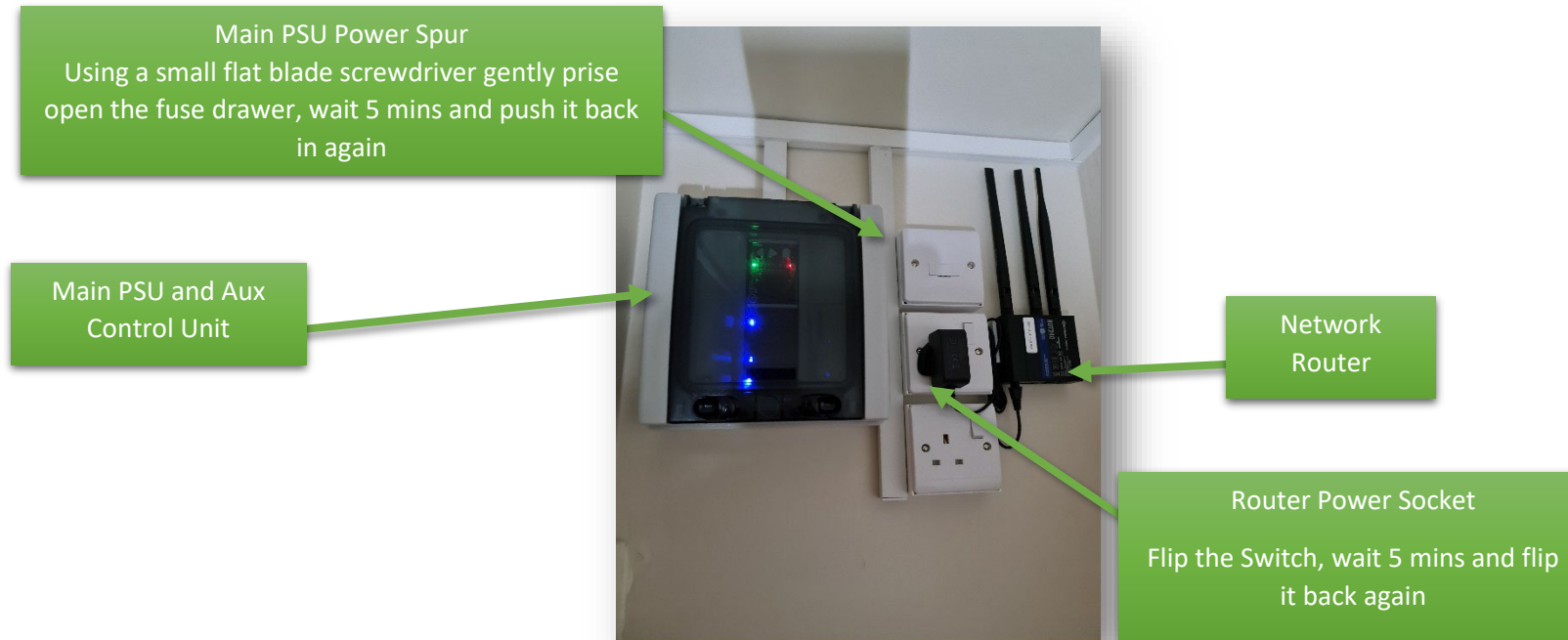
The Sensors do not directly connect to the Staff Monitoring app

Trouble Shooting

ALM Sensors have zero user configuration options and each sensor is specifically coded and programmed to work with specific locations.

If a particular sensor does not appear to be responding the first step is to locate the sensor PSU, turn the sensors off for a few moments and then turn it back on again.

If a group of particular sensors do not appear to be transmitting information, but do appear to be turned on (green glow from the sensor), then locate the EAP or Network Router and turn the router off for a few minutes and then turn it back on again.

Main PSU Power Spur
Using a small flat blade screwdriver gently prise open the fuse drawer, wait 5 mins and push it back in again

Main PSU and Aux Control Unit

Network Router

Router Power Socket

Flip the Switch, wait 5 mins and flip it back again

The Routers are automatically configured to reboot each day at 9am ALM Sensors are designed to continually attempt re-connection.

If the above steps fail to bring the equipment back on line, please contact MyQOL support staff who can in the first instance attempt remote connection to the Router and advise further steps or arrange engineer visit.

If the sensors are operational but seem to be operating outside calibrated specifications (e.g., constantly reporting high sound in an empty room or excessively detecting heat when the room or space is vacant) then contact MyQOL Support who can perform remote sensor calibration operations either directly to the sensor or via the provided PDA.

ALM & EM Systems Important Disclaimer and Information

- ▶ ALM & EM Systems are designed to report and display wellbeing information.

- ▶ The information gathered is not considered medical grade or accurate to medical grade.

- ▶ Information presented can be used to indicate further medical assessment may be required.

- ▶ Large everyday heated objects like space heaters or hot food trolleys or warm bucket of water/cleaning fluid can raise alerts from thermal sensors.

- ▶ Fast Moving Residents or Staff can Trigger a Possible Fall Event Alert from the ceiling sensor.

- ▶ Audible alerts can be turned off so as not to cause noise nuisance at certain times, but should not remain muted for extended periods.

- ▶ Alerts will continue to be sent and received as long as the alert condition remains.

- ▶ PDA devices will still buzz/vibrate even if muted.

- ▶ As with all IoT (Internet of Things) systems. ALM relies heavily on reliable broadband and/or 4G/LTE internet connections and unreliable connections can and will provide unreliable results.

- ▶ In many cases reliable connections are entirely dependent on the environment within the vicinity of the target operational location.