O_3 Sensor Hub

Dave Stephens • Product Strategy Manager
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Delta CONTROLS
A Delta Group Company

New Product

- THINK. SENSE. SPEAK.
- ADVANCED SENSOR TECHNOLOGY AND TOTAL ROOM INTEGRATION

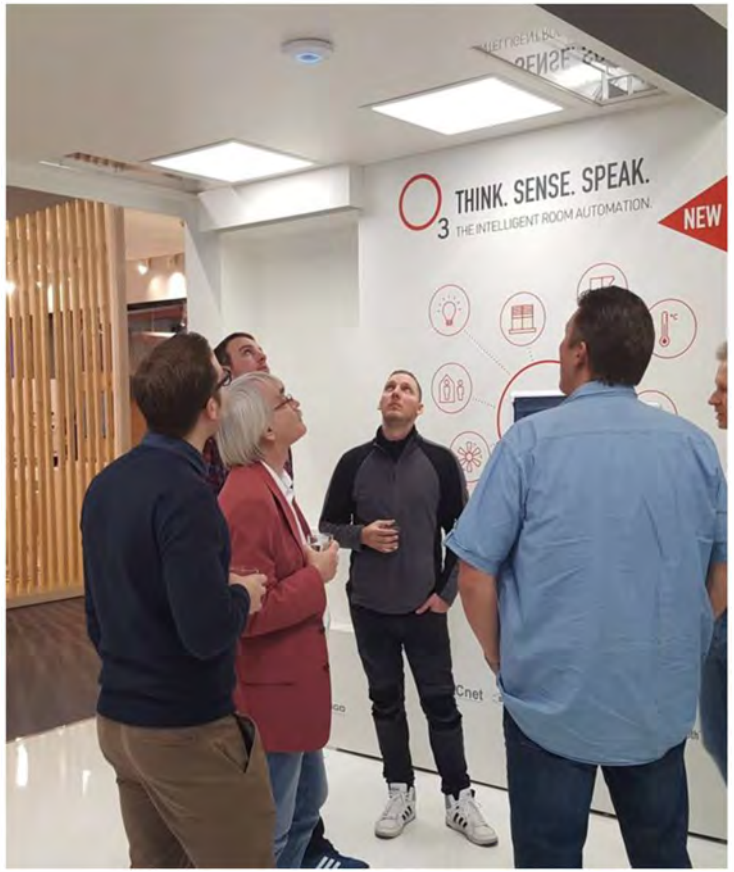
O3 Sensor Hub

O_3 Sensor Hub

New Breakthrough Product

- LIKE A THERMOSTAT…BUT BETTER
- BREAKTHROUGH! SENSOR FUSION
- BREAKTHROUGH! EXPERIENCE
- CONNECT TO O_3 CPU
- CEILING MOUNT

New Product



O3 Sensor Hub

What is it?

New Name

NOT AN ACRONYM

- THINK. SENSE. SPEAK.
- ADVANCED SENSOR TECHNOLOGY AND TOTAL ROOM INTEGRATION

O_3 Sensor Hub

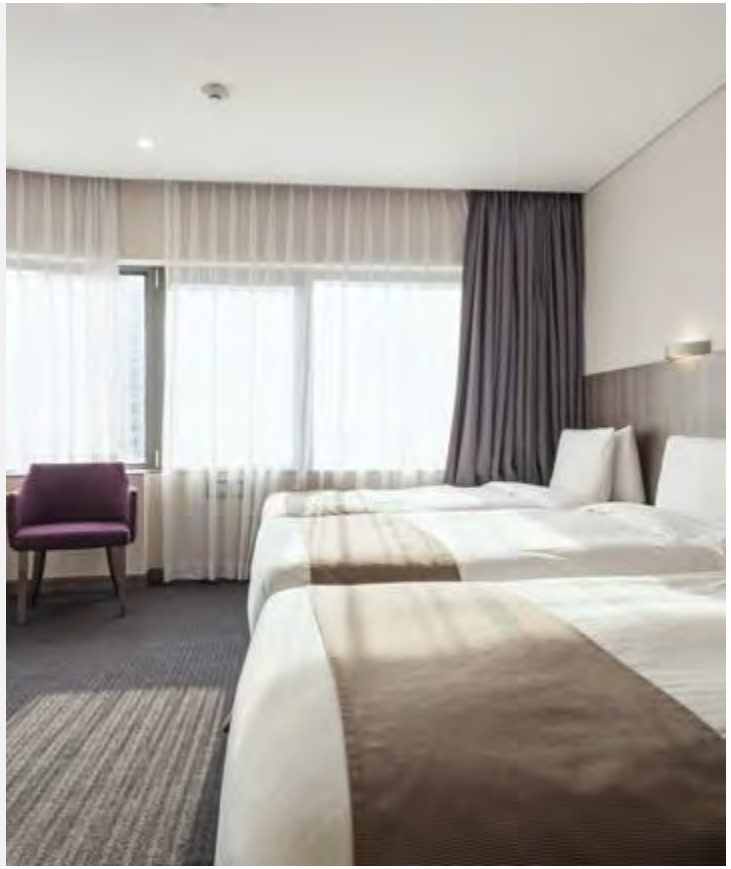
Sense.

TEMPERATURE
IR | THERMISTORS

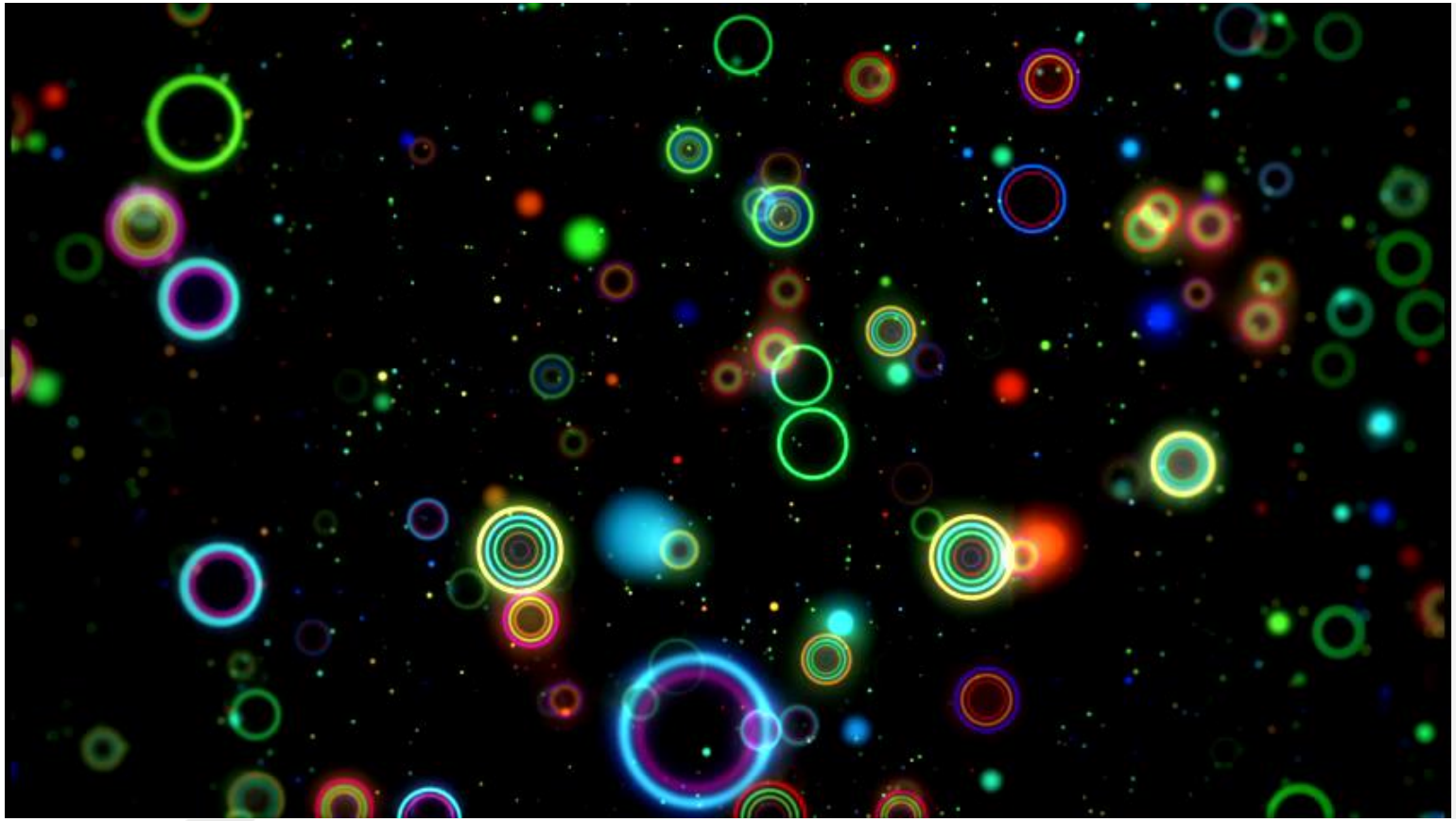
OCCUPANCY
PIR | AUDIO | IR

LIGHT COLOR
LIGHT INTENSITY

HUMIDITY



Speak.



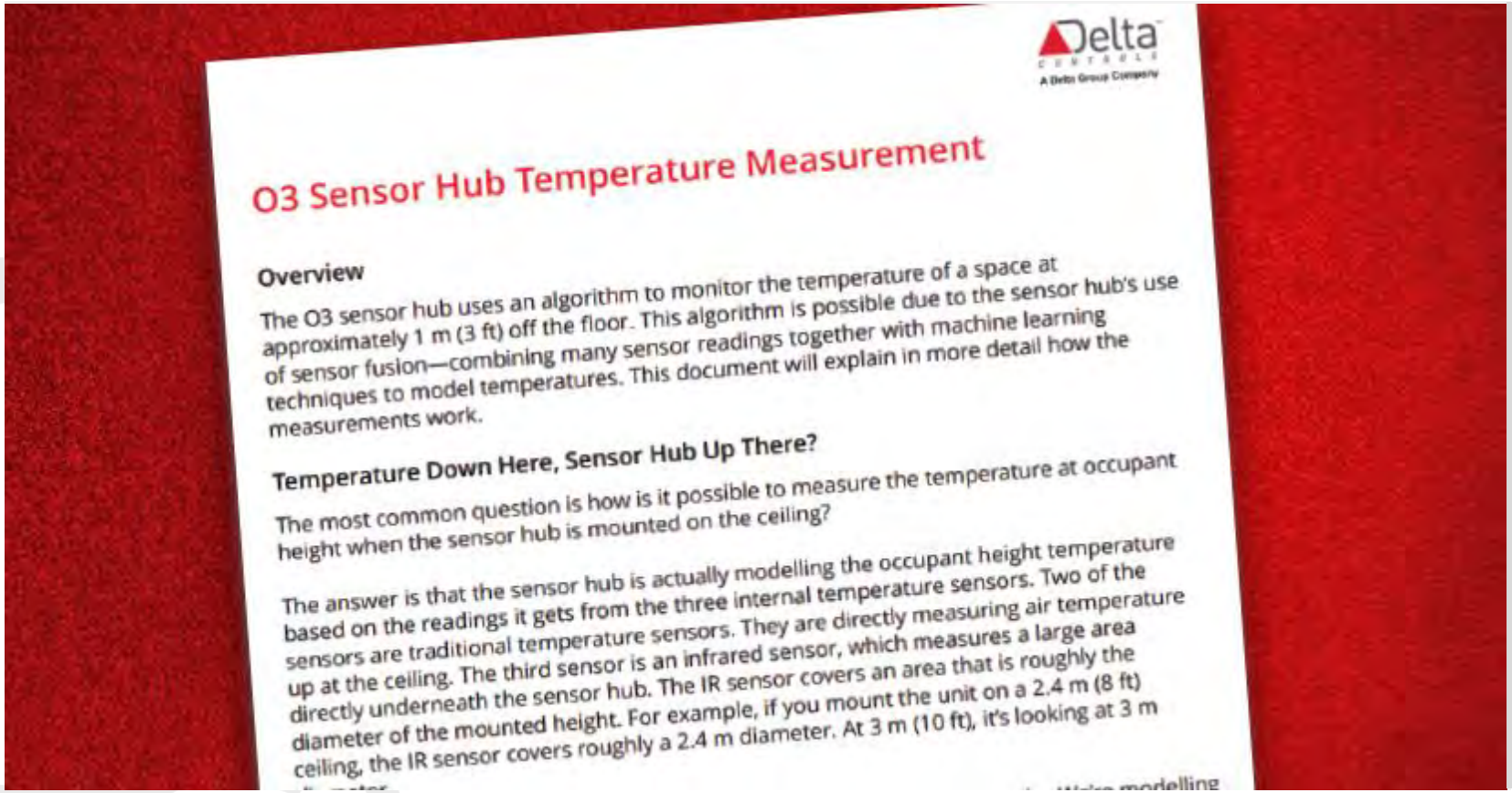
- WITH COLOR
- WITH MUSIC

Think.

You shouldn't do things
differently just because
they're different.
they need to be...
better.

- TEMP SENSOR FUSION
- OCCUPANT SENSOR FUSION
- O3 CONTROLLER
  + O3 APP
  + enteliWEB

Temp Sensor Fusion



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O3 Sensor Hub Temperature Measurement

Overview

The O3 sensor hub uses an algorithm to monitor the temperature of a space at approximately 1 m (3 ft) off the floor. This algorithm is possible due to the sensor hub's use of sensor fusion—combining many sensor readings together with machine learning techniques to model temperatures. This document will explain in more detail how the measurements work.

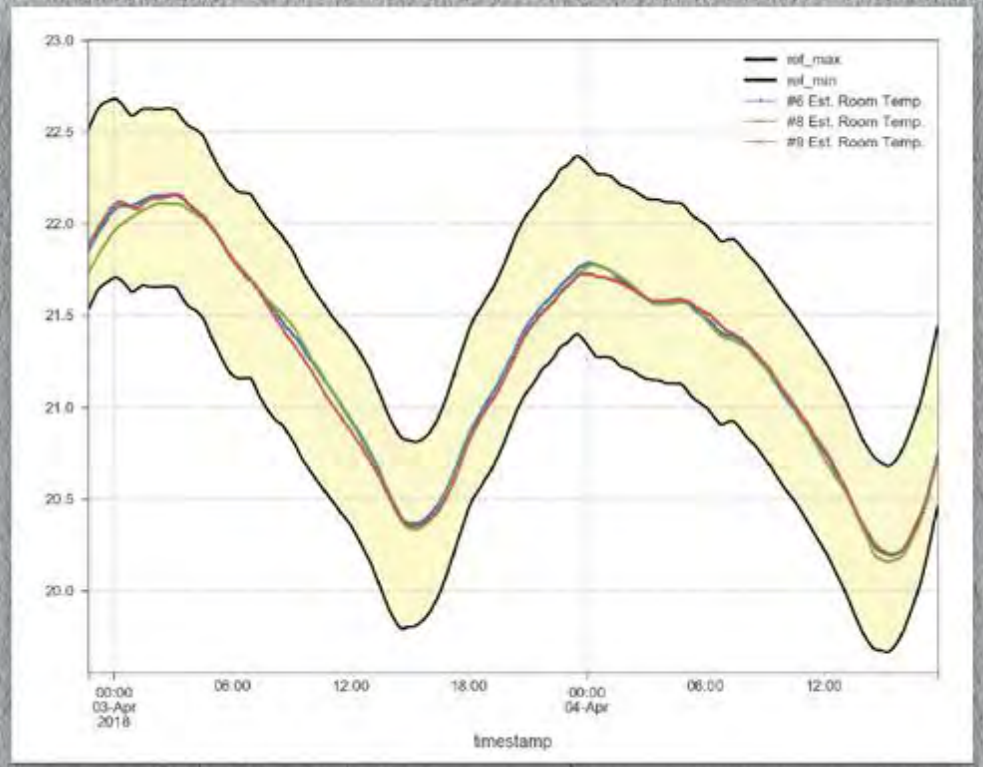
Temperature Down Here, Sensor Hub Up There?

The most common question is how is it possible to measure the temperature at occupant height when the sensor hub is mounted on the ceiling?

The answer is that the sensor hub is actually modelling the occupant height temperature based on the readings it gets from the three internal temperature sensors. Two of the sensors are traditional temperature sensors. They are directly measuring air temperature up at the ceiling. The third sensor is an infrared sensor, which measures a large area directly underneath the sensor hub. The IR sensor covers an area that is roughly the diameter of the mounted height. For example, if you mount the unit on a 2.4 m (8 ft) ceiling, the IR sensor covers roughly a 2.4 m diameter. At 3 m (10 ft), it's looking at 3 m

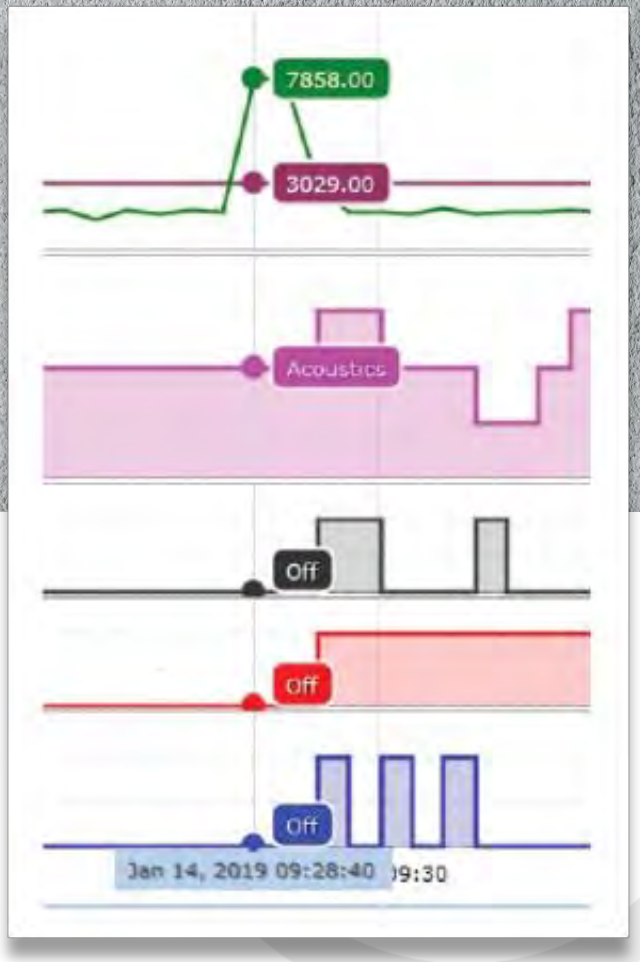
- 3 TEMP SENSORS
  - COMBINES SENSOR READINGS TOGETHER WITH MACHINE LEARNING TECHNIQUES TO MODEL
- MACHINE LEARNING
  - KALMAN FILTERING
  - MODELLED OVER TIME

Temp
Sensor Fusion



- COMPOSITE
- IR + THERMISTOR
- ACCURACY

Occupancy Sensor Fusion



- 3 SENSORS
  - PIR – CHECK FOR MOTION
  - MICROPHONE – MEASURE NOISE
  - IR – HEAT SPIKES (I.E. PEOPLE)

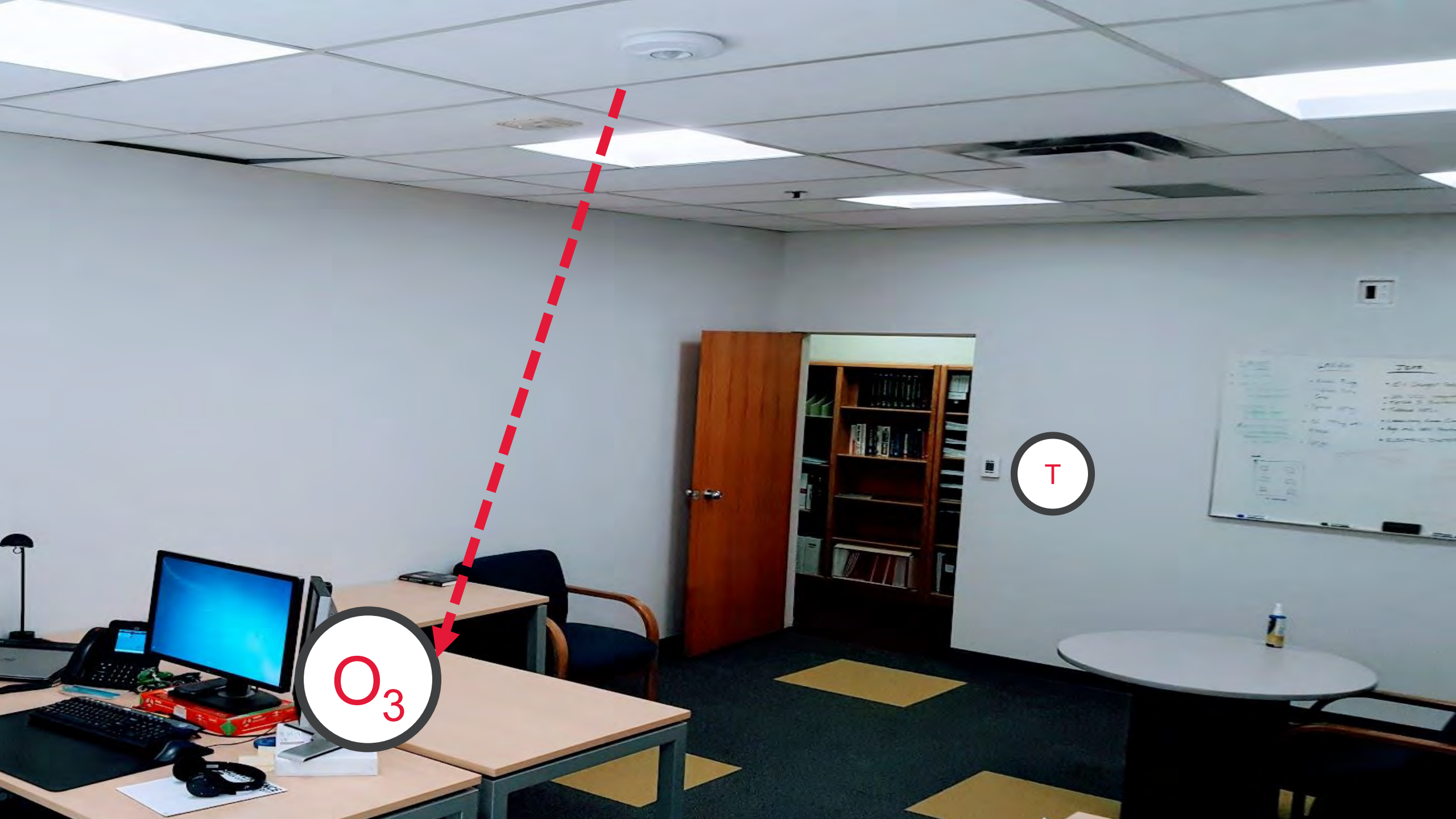
- MACHINE LEARNING
  - ONLY PIR WILL TRIGGER OCCUPANCY
  - SOUND ONLY CONSIDER AFTER OCCUPANCY TO LATCH IT ON
  - AMBIENT NOISE FILTERED OUT

LOCATION

Location

- CLOSER TO OCCUPANT
- INDIRECT SUNLIGHT
- RADIO ANTENNA
- EASY TO MOVE WALLS / EQUIPMENT
- WALL ACNE

- OCCUPANCY
- TAMPER AVOIDANCE
- OPEN OFFICE CUBICLES
- T-BAR vs WALL INSTALLATION


T
O_3

Wireless

enocean®

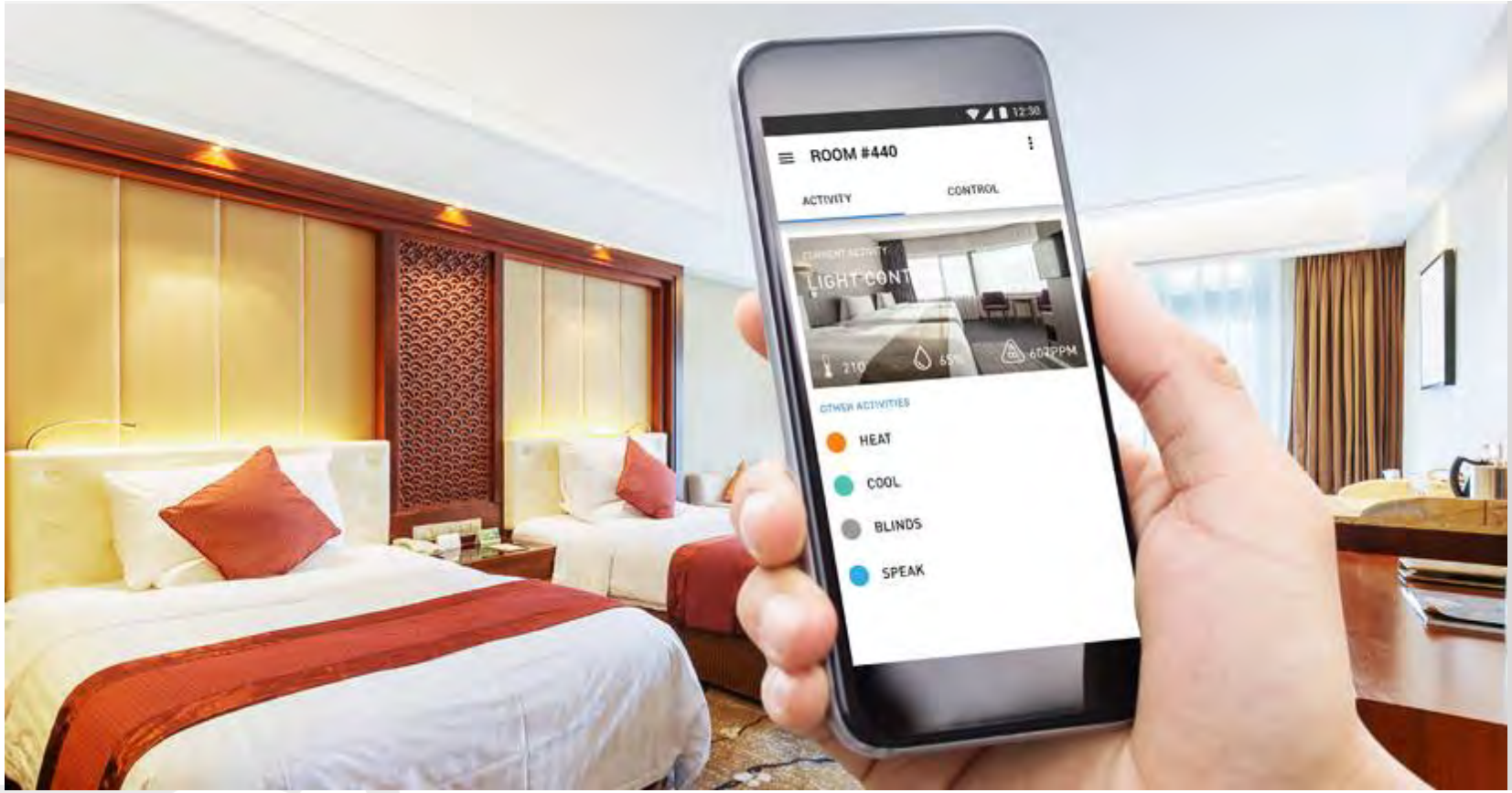
- SENSING AND CONTROL DEVICES
- GREAT FOR RETROFIT
- WINDOW / DOOR CONTACTS

- MORE ON THIS IN A MOMENT

IR BLASTER

- SENSING AND CONTROL DEVICES
- GREAT FOR RETROFIT
- WINDOW / DOOR CONTACTS

O3 App

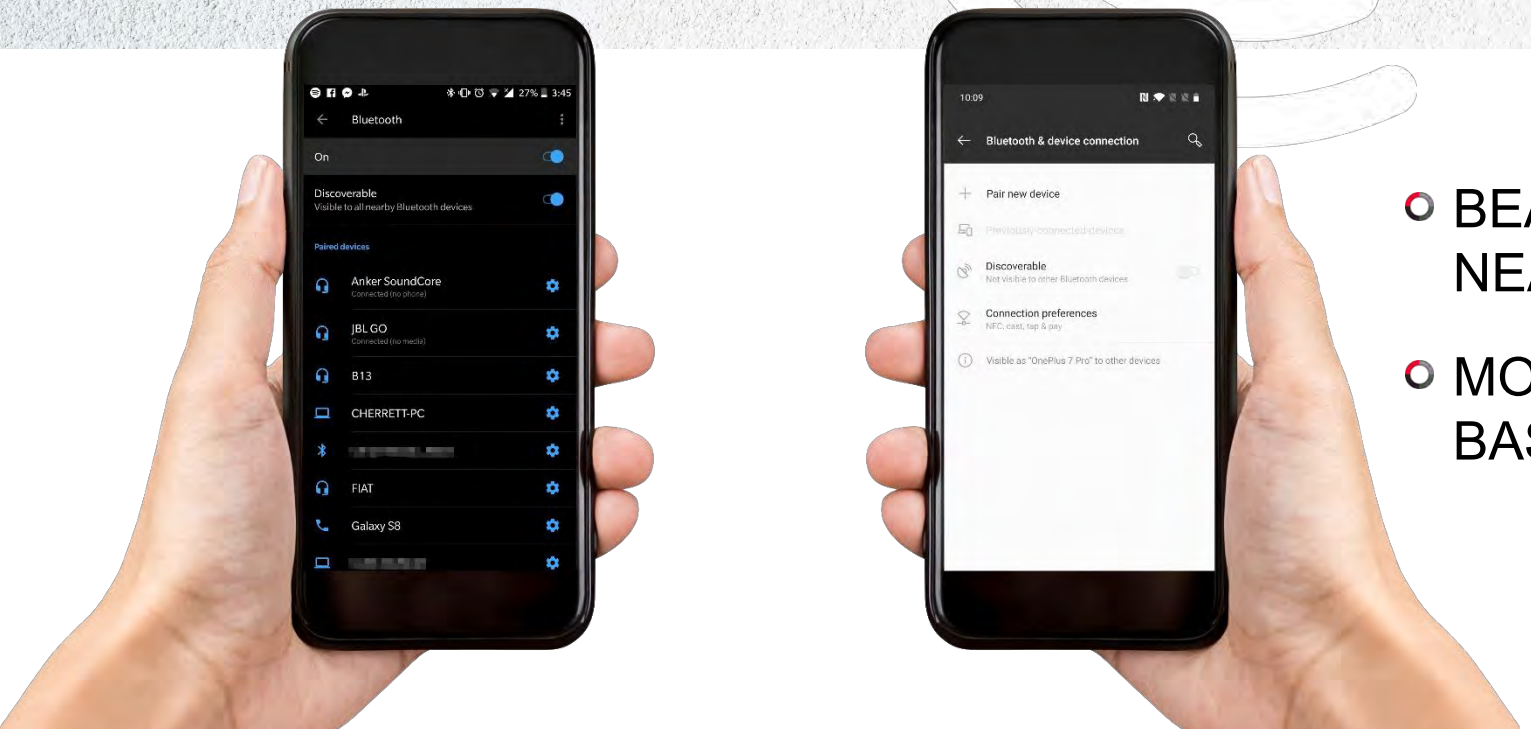


- ROOM LOCATION
  HUBS KNOW WHEN YOU'RE NEARBY
- EASY

  Sign in with Google
- EXPERIENCE
  ACTIVITY CONTROL
  HUB FEEDBACK – LED RING, SOUND

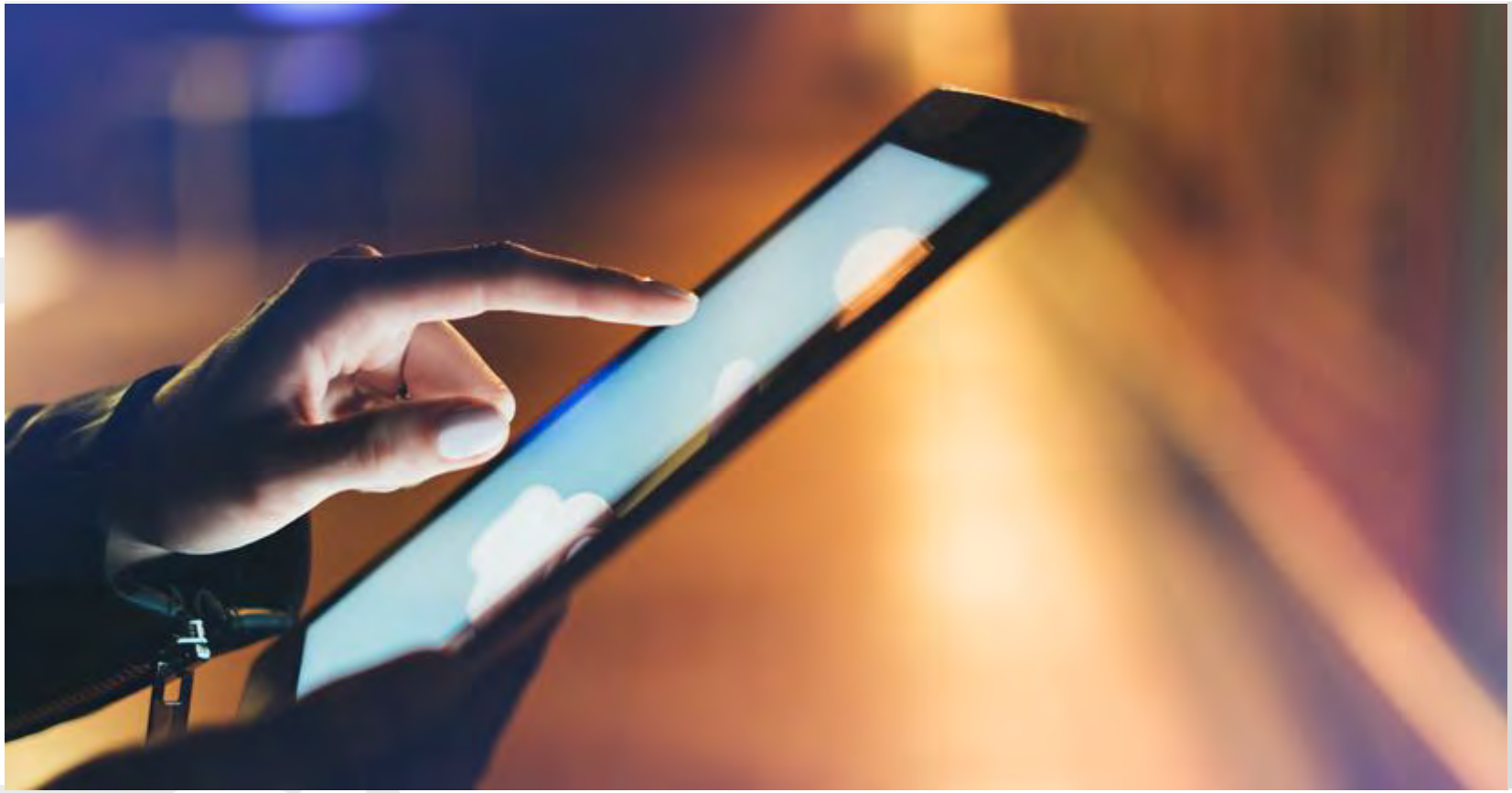

New
Experience

New Experience



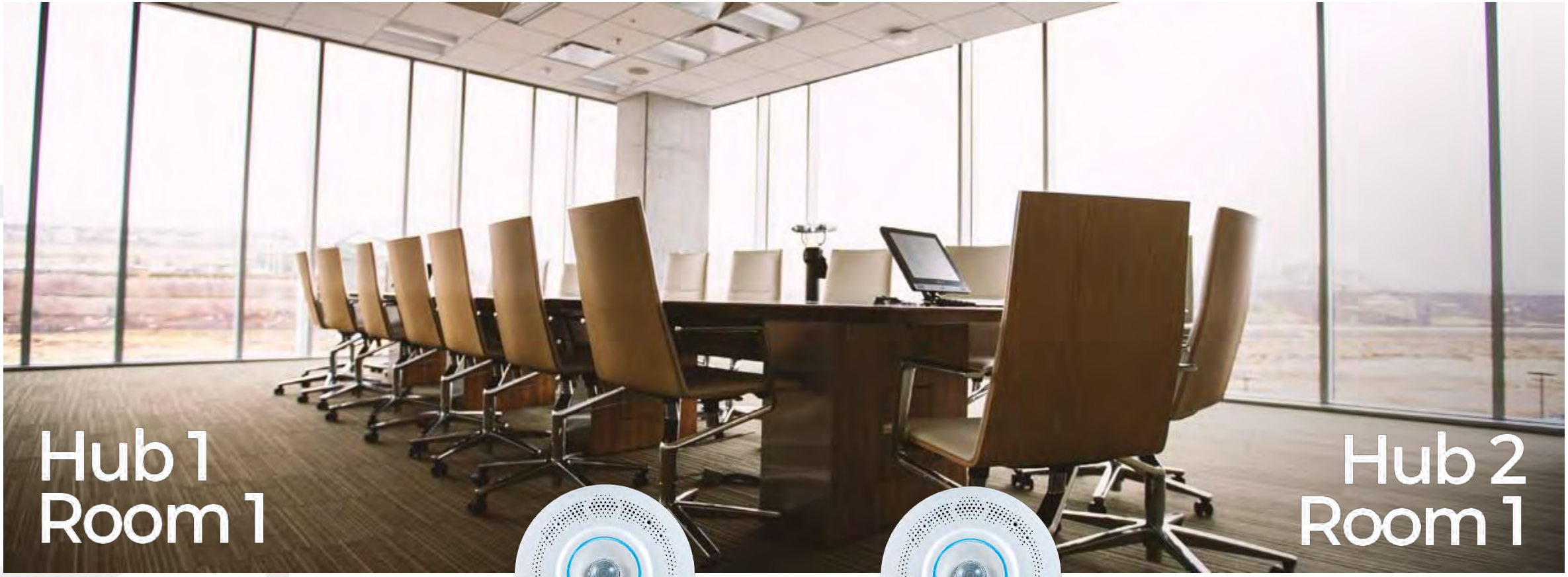
- BEACON BROADCASTS MESSAGES TO NEARBY DEVICES
- MOBILE DEVICES DISPLAY LOCATION-BASED MESSAGES

New Experience



- BEACONS ARE ABOUT PROXIMITY
- CLOSEST ROOM IS LISTED ON TOP
- MULITPLE HUBS CAN BE BOUND TO ONE ROOM, FOR OPEN OFFICES

New Experience



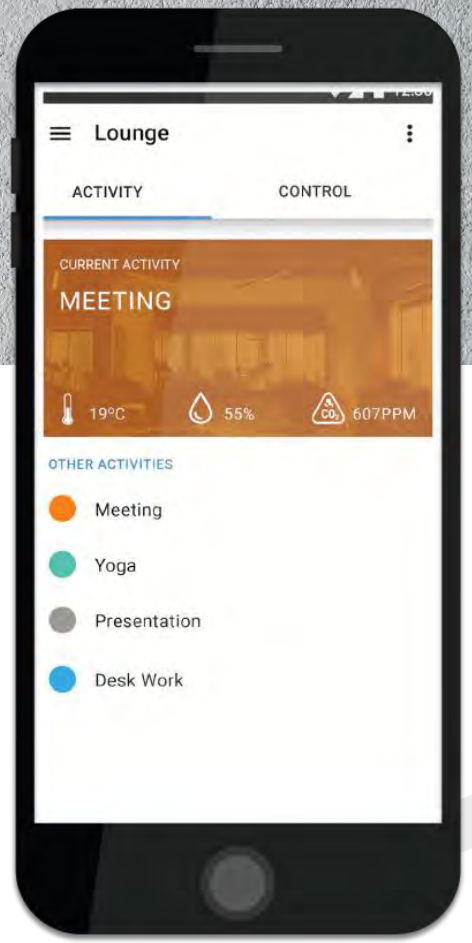
Near

Far

Far

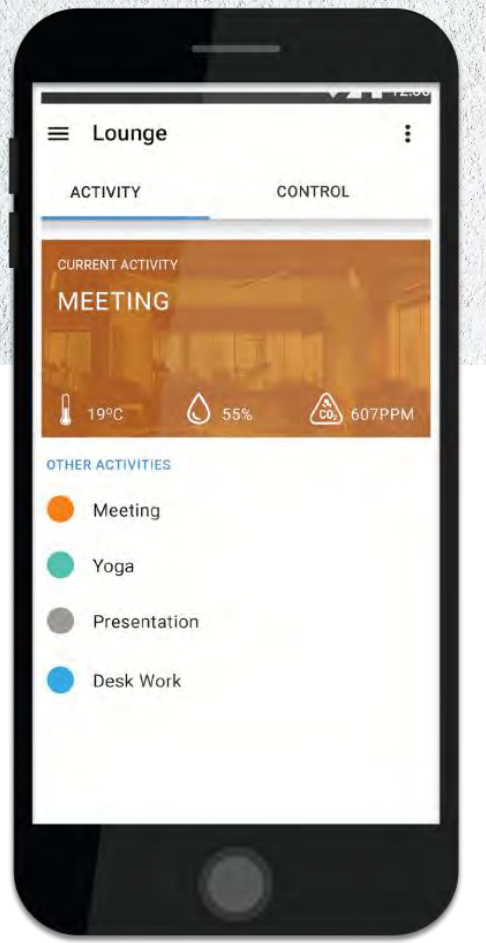
Near

Activity Based Control

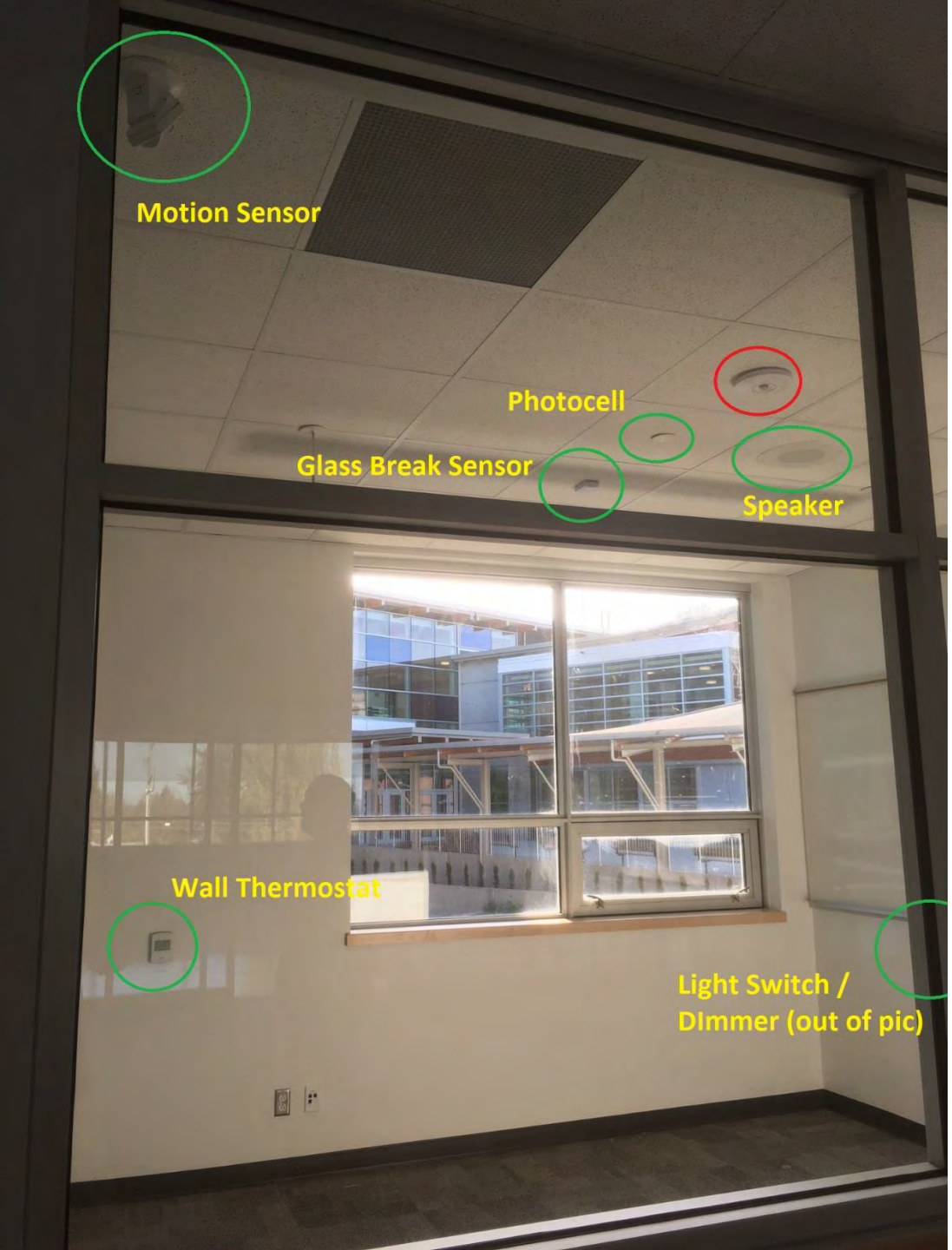


- ONE-TOUCH CONTROL
  LIGHT LEVEL, BLIND POSITION, TEMP SETPOINT
- CUSTOMIZED
  NOT “CANNED”
  PROGRAM CUSTOM ACTIVITIES
- RE-USABLE
  STORED IN EWEB
  CREATE ONCE USE IN MULTIPLE ROOMS

Take Control



- EXPLICIT CONTROL
  LIGHT LEVEL, BLIND POSITION, TEMP SETPOINT
- ROOM SPACIFIC
  ONLY EQUIPMENT IN ROOM IS DISPLAYED
- OCCUPANT RULE
  PERMISSIONS IN EWEB



Target Room

- SCHOOL:
  COULD REPLACE 6 DEVICES WITH ONE O3 HUB

Most Advanced Device in a Room

Think.

- Sensor Fusion
- Instant Occupancy
- Activity Based Control
- Programmable O3 CPU

Sense.

- IR + Thermistor
- PIR + Sound
- Light Intensity + Color
- Humidity
- Enocean
- One Sensor – HVAC,
- Lighting, Access

Speak.

- Play Sounds
- Color Ring
- Mobile App

Benefits for Everyone

Partner Cost.

- Multi-sensor cluster
- Installation in ceiling
- Twist-in mounting plate
- Free to move office walls, equipment, etc

Experience.

- Control temperature at occupant location
- Bluetooth beacon
- Mobile app
- Trust – light & sound interaction
- No wall acne

Owner Savings.

- Energy - Instant occupancy
- Energy - Indirect light sensing (daylighting)
- Tamper avoidance
- Free to move office walls, equipment, etc