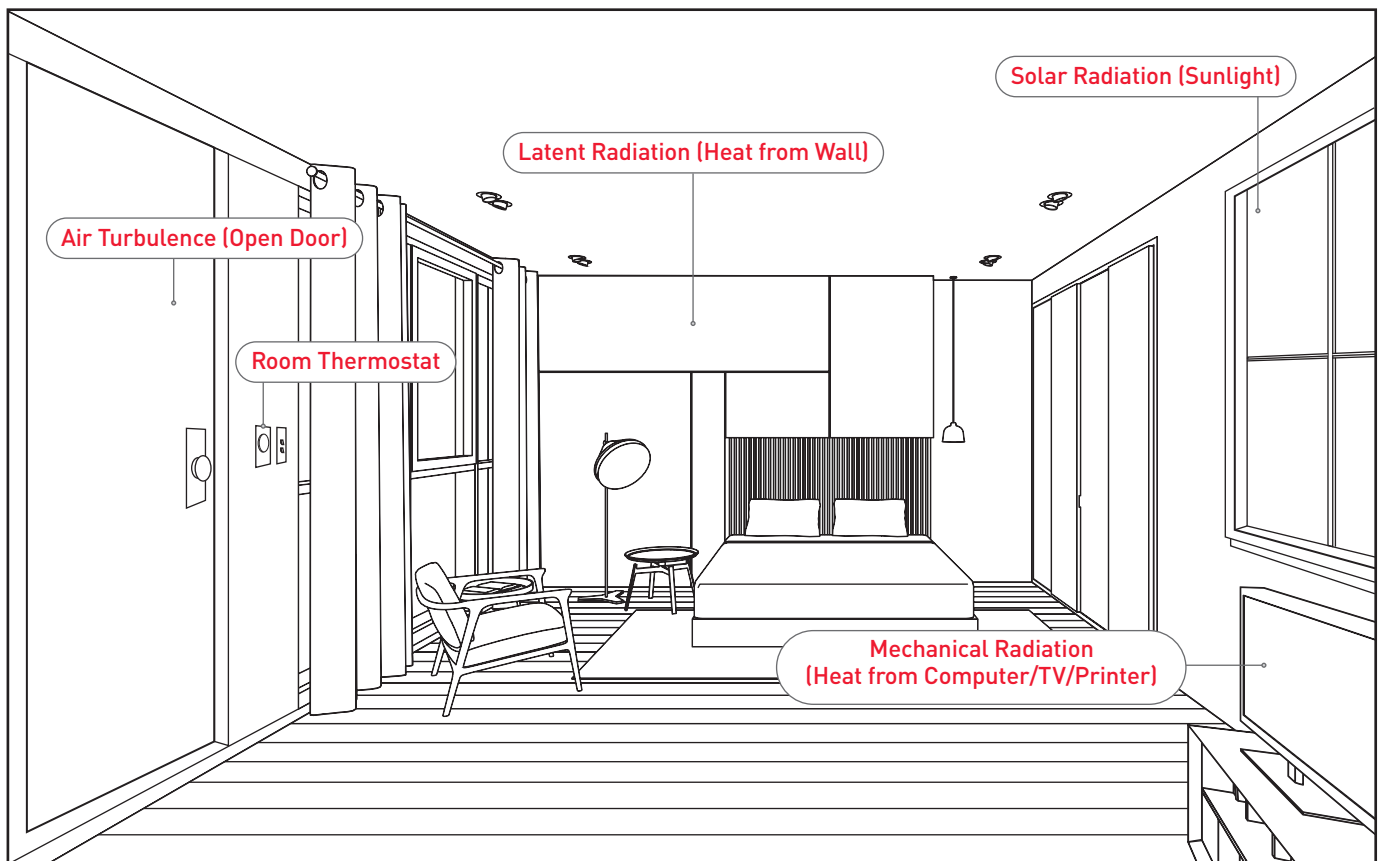# A THERMOSTAT
SIMPLY ISN'T ENOUGH

Over the past 100 years, we've seen extreme advances in building technology. With all this progress, one area has lagged: how we control the environment within the building. In the age of smart technology, environmental building control still centers on the century-old concept of the room thermostat.

In a typical room, building designers will often place the thermostat near a light switch at the entrance of the room. This is generally the most convenient and cost effective placement during installation. As a consequence, during day-to-day use, an occupant walks into an unoccupied room, turns on the lights, and has access to the easy-to-find thermostat and in some cases, they can easily make adjustments. It's usually on in interior wall, away from a coffee pot, copier, printer, and positioned to avoid the sun shining in from the window or drafts coming in from the door.

While thermostat placement may appear straightforward, no matter how hard the designer tries, it often ends up in the wrong location; wrong in the sense that it doesn't achieve its primary function. The thermostat fails because it's measuring the temperature of the wall and not the occupants in the room. With a wall-mounted thermostat, the wall may be comfortable, but not the occupants.

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THERE'S MORE TO WORRY ABOUT
THAN TEMPERATURE

Occupant comfort isn't just about the dry-bulb temperature. Experts in the field (like ASHRAE) have noted that human comfort is a function of several parameters in the environment including:

- ► Relitive humidity
- ► Noise levels
- ► Air motion
- ► Air quality
- ► Lighting levels

Comfort is also a function of the occupant's perception of having control over their environment. In the field, it's not unheard of to use a "placebo" or fake thermostat to give the occupants something to adjust.

HIGH EXPECTATIONS

Occupants in commercial buildings, school environments, healthcare spaces or hospitality environments have higher expectations than ever. They see advanced technology at home such as web-enabled thermostats, advanced camera/security system, or speech recognition devices and want it in their office. Apple's Siri and Google's Alexa, for better or worse, are bringing those higher expectations to the workplace.
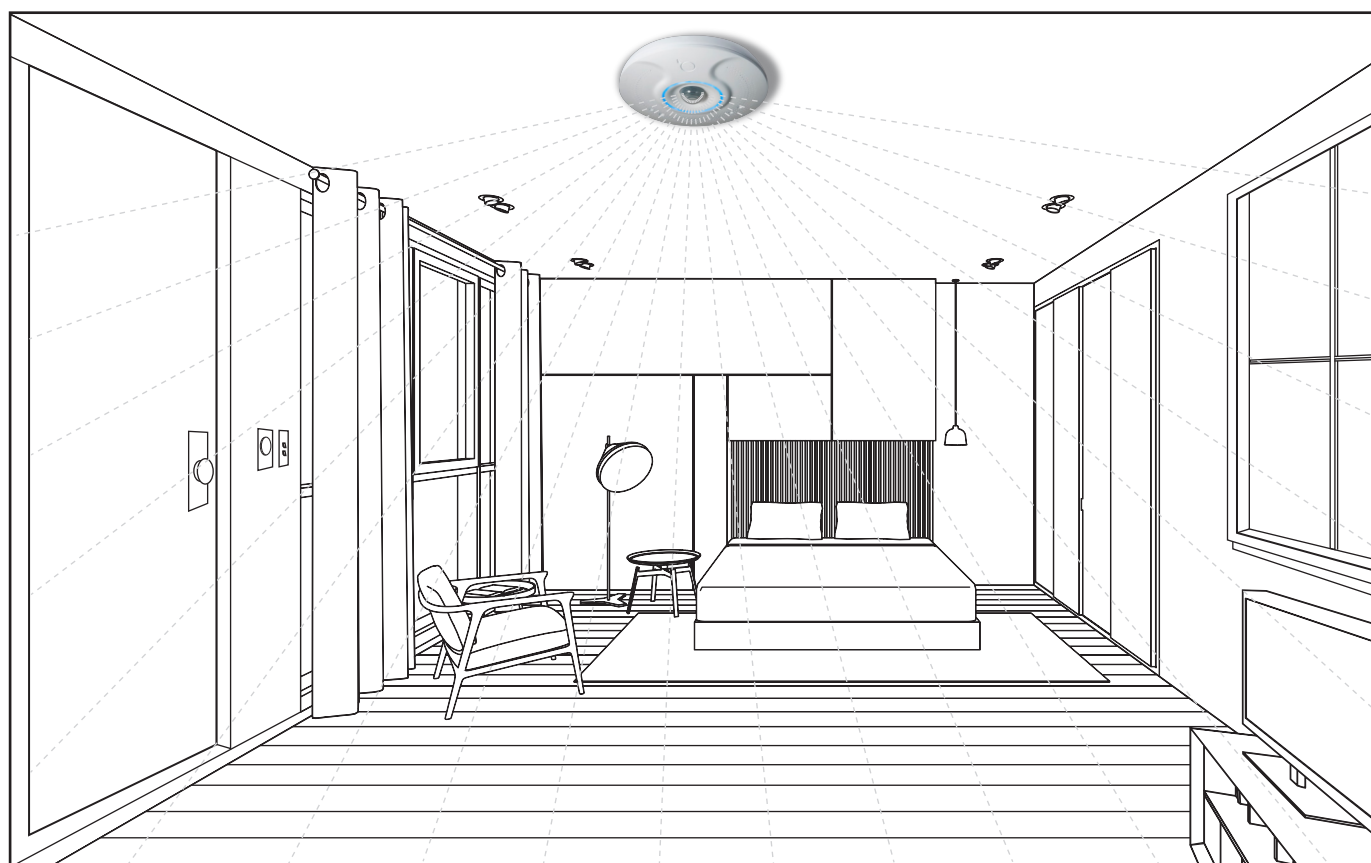

INTEGRATED ROOM CONTROL WITH O3

If you haven't heard of integrated room control yet, you will soon. Originating in Europe, but recently gaining traction in North America, integrated room control brings the latest technology to the commercial environment.

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The days of thinking you can set a room thermostat to 70° Fahrenheit (21°Celsius) and forget about it are over. A new, better approach is having the room respond to occupant activity within the space. The room should know you entered. It should know the lighting levels. It should respond to the cooling load requirements immediately. Instead of giving occupants a dial to turn in the hope that it will satisfy everyone in the room, the room should use an array of sensors to proactively make the right choice without occupant intervention.

With the O3 Room Control System, the room "knows" who enters the space and uses multiple sensing parameters to adjust the room accordingly. When the occupants leave the space, the integrated sensor hub senses it, puts the space in a standby mode, closes the window shades, turns off the lights and shuts off any audio-visual equipment.

► Air turbulence and temperature fluctuation is normalized (field of detection)   ► Predictable heat variation from the plenum

► Center of the room, far from outside temperature influence

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HOW DOES
INTEGRATED ROOM CONTROL WORK?

The central idea behind integrated room control is to let smart technology simplify your life, not complicate it. The end goal is to have an occupant walk into the room and have it instantly provide a comfortable experience. Integrated room control and the O3 System use advanced technology like machine learning, thermal imaging and background noise profiling to learn what an occupied space "looks" like. Using the same technology, it also learns what a comfortable room feels like.

Our O3 Sensor Hub uses sensor fusion to combine an array of technologies to sense comfort conditions throughout the space, not just a single temperature point on the wall. With audio and visual feedback, the O3 Sensor Hub communicates with occupants to ensure they're aware of what it's doing. O3 delivers the "smart home experience" that occupants expect in the commercial and institutional space.

WHEN WILL IT BE AVAILABLE?

It just arrived. As IoT technology continues to grow, the O3 Room Control System will continue to evolve as a room-level integration platform.