Smart Door Locks

What things did you forget to turn off or lock—& why can't they tell you?

Because adding home automation to appliances is exceedingly complex and difficult. It is a product manager's, systems integrator's, and home owner's nightmare. There are more than a dozen proprietary, incompatible automation protocols to choose from; there are no CPUs or operating systems ideally suited to the task; and the reliability of existing embedded systems built on yesterday's CPU architectures is questionable.

Imagine that you're 10 miles away from home, headed for work, and that little voice in the back of your mind asks, "Oh, heck; did I remember to lock the front door?" Then in a more frantic voice, it says, "Oh, No! I think I left the curling iron on!"

Scenario A—no home automation

You exit the freeway, and head back home to check everything. You're going to miss an important meeting and might also miss a project deadline later today. You arrive at home to find the front door locked and everything that could start a fire off. Nothing was wrong, but you weren't sure, and lost two hours by backtracking.

Scenario B—proprietary automated lock

You exit the freeway and park, so you can check the proprietary home automation app on your smart phone. It tells you the front door is locked, but the 4-AA batteries in the side-door lock died, so it displays a big question mark instead. And there are no automated door locks for sliding patio doors on the market today, so the smart phone app simply doesn't say anything about it.

Your proprietary home automation system can't reliably tell you about the rest of the things that are worrying you. You bought plug-in appliance control modules for your curling iron, clothes iron, and space heater, but you're not entirely sure if you or someone else in the house plugged any of them directly into other outlets without control modules, so you decide to turn around and check everything. Now you're going to be 90 minutes late for work.

Scenario C—IOTA-Powered lock

You get two blocks from home, and your smart phone sounds an alarm. You pull over to the curb and look at the display. It's flashing red, and says you left your front door unlocked, but not to worry, because the front-door lock noticed that your phone had gone out of range, and locked itself, the side door, and the patio door.

And since the IOTA-Powered motion sensors embedded in all your ceiling lights hadn't reported any movement (other than you) anywhere in more than an hour, the front-door lock also told the curling iron and oven to shut off.

All these devices communicate directly over Wi-Fi, Ethernet, or HomePlug, using Internet Protocol (IP—the native language of the Internet). This enables them to use whatever network connection is available, instead of relying on a dedicated, proprietary protocol conversion box.

But more importantly, all these devices are now intelligent—they work even when the Internet goes down because they have intelligence and networking built-in. They are also re-programmable, so that you can change their behavior.

Next stage—the truly smart home

Instead of just a few big things being connected together, IOTA envisions connecting any and every object to the Internet.

After you leave, and your house has locked and made itself safe, what if nearly every item in it reported its state and location, performing an automatic inventory? Now you have an accurate list for insurance purposes, can easily locate that missing item you put in "a safe place", and can tell if your teenagers have been snooping around your Christmas-present hiding spot—because every doorknob, drawer, and tchotchke has its own Internet address and a sensor or two.

Why is IOTA the best solution for automation?

All these fancy scenarios are possible now, but are not widespread because it is complicated and needs multiple systems from multiple vendors. It is always custom-built, very hard to program, extremely hard to integrate, and always expensive.

When device manufacturers use IOTA Computing's all-in-one processor, networking, operating system, authentication, Internet and smart phone APIs, these capabilities could be widespread in just a few years. IOTA's architecture makes this vision secure, simple, and inexpensive to add to products.

IOTA Benefits

Tight Integration
Spend more time innovating

Integrated IP stack & MAC
Network-enable anything

Intrinsic Power Management
Run on watch batteries or scavenged energy for years, without jumping through hoops

Intelligence is a two-way street

A friend of our CEO's once left home for a week's vacation in the Caribbean. As he was leaving, he pushed the garage door button, watched it start to close, then drove off. But the door struck something on the way down, and opened up again.

Because his garage door didn't have a bi-directional radio link with the remote control, much less an Internet link, it couldn't warn him that his garage was wide-open. Can you imagine what would have happened if a neighbor hadn't noticed and locked up for him?

Confirmation of remote automation commands completes the loop, but is frequently overlooked in many systems, because of the complexities involved. But confirmation that the results of your commands are as desired is very important. This can only happen if all of your devices can talk to whatever control panel you happen to have closest—your smart phone, the laptop, the TV—whatever. To pull this off, you have to get IP networking embedded in every object you want to monitor or control.

Automate for more than just yourself

So you say you're not forgetful at all. But what about the others in your household, or anyone you've loaned a key to? Do your teenagers ever forget to turn off and lock everything when they leave the house?

And what about your mother, who is in the early stages of Alzheimer's? Won't you feel much more secure when the intelligent objects in your home that she uses are pinging your phone periodically with updates, and sound an alarm when something unusual happens? Wouldn't you like to find out she disappeared from Wi-Fi range within a couple of minutes so you can check on her, instead of a couple hours later when it's freezing and dark outside?

Adding networked intelligence like this can change the world—but it will only be ubiquitous if it is reliable and easy to integrate.

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