

Review: CES shows Internet of Things' potential and challenges

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The Internet of Things may be in its early stages but it's evolving rapidly - and experiencing some difficult growing pains.

As expected, the Internet of Things was one of the dominant themes at the Consumer Electronics Show. Everyday devices packed with sensors and radios that allow them to collect and transmit data to other [gadgets](#) were everywhere.

But I was still surprised by the tremendous diversity of such devices on display.

For example, I saw a tea kettle from Smarter that could be turned on remotely with a smartphone, a bike pedal from Connected Cycle that can track users' activity and alert them if the bike is stolen, and [light bulbs](#) from Sengled that can double as wireless speakers for your smartphone or as Wi-Fi repeaters to boost a signal in the far corners of your house.

The Internet of Things is being pushed into [niche products](#) and the edges of the market, said Patrick Moorhead, president and principal analyst of Moor Insights & Strategy, a technology consulting firm.

"Last year was about thermostats and lighting and key locks," he said. This year the sensors and radios were put to use in even more unusual ways, such as devices that water your plants automatically when the soil is dry, he said.

But it's not just that the Internet of Things is showing up in more gadgets. The gadgets themselves are becoming more useful by talking directly to one another without the need for human intervention.

Up to now, these developments have taken something of a hub-and-spoke approach. Connected gadgets talk directly to a computer, a smartphone or a computer-like hub device. Your Fitbit reports activity to your smartphone. You program a hub to turn on your alarm, lock your doors and turn off all your lights at the press of one button.

But that model is starting to change. Nest, which is owned by Google, announced partnerships with other companies whose devices will now talk directly with its thermostats and smoke detectors. For example, Ooma's Internet telephone gadget can tap into the Nest gadgets' ability to sense the presence of people in a house. Users can set their Ooma [device](#) to give them a call if their Nest thermostat doesn't detect that their teenage son has arrived home after school.

And that may be just the start. Intel CEO Brian Krzanich demonstrated at CES how a connected door lock might unlock automatically when a security camera recognized the owner's face. Hosain Rahman, CEO of Jawbone, described how his company's latest Up activity tracker could automatically tell your lights to turn on when it sensed you were getting up from bed.

"I don't have to program that," said Tom Kerber, director of research at Parks Associates, a technology consulting firm. "The devices are talking to each other and making those smart decisions on your behalf."

However, the show also pointed out that as the Internet of Things is rapidly developing, it's also facing some serious challenges, most notably a lack of standards.

For years now, many Internet of Things devices haven't been able to talk to one another because they use different communications protocols. That problem has started to be solved by hub devices that can translate among devices.

But a new problem is emerging: Many different companies want to establish themselves as the primary gatekeeper for the Internet of Things, and the ability of devices to communicate with one another is starting to be more about which companies have deals with each other.

Honeywell's new Lyric smart-home system supports numerous communications technologies, but it won't work with Nest's thermostats or smoke detectors. Instead, Honeywell insists you use its own devices. EchoStar's new Sage home automation system is similarly capable, but the company is limiting the products that it will work with to those that it has certified. Apple has its own home automation platform called HomeKit, which appears to be a rival of Samsung's SmartThings.

Moorhead sums up the situation: "Everything at this point is completely fractured, and that's going to limit growth until people can play more nicely together."

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