Connected lighting may be the IoT killer app

Richard Quinnell - May 16, 2017

There is a lot of talk about the IoT and plenty of experimentation, but as yet nothing has arisen that will serve as the "killer app" that skyrockets in demand, driving down prices to enable a cascade of applications. But a case can be made that connected lighting might be such an app, strange as it might seem. A commonplace technology that has remained essentially unchanged for a century may be the first to jumpstart the IoT revolution.

Depending on to whom you listen, the IoT is expected to comprise 20-50 billion devices by 2020. The belief is that the IoT will be everywhere, affecting virtually all aspects of modern life. But as yet IoT applications, while they have been intriguing, they have not been compelling enough to explode in the market the way pundits have predicted. There are just not enough use cases with a demonstrable economic benefit to initiate self-reinforcing market growth.

The industry is making progress on lowering the cost of connectivity, but not fast enough for the chain-reaction of rising demand and corresponding volume production pricing reductions to really take off. The tens of billions of predicted devices serve such a wide range of applications that the individual solutions fail to reach the volumes needed to build significant production cost efficiencies. What is needed is a single application that, in itself, has the potential to require billions of devices.

Enter connected lighting.

Artificial lighting has been in use for thousands of years, with electric lighting in use since 1880. Today, every continent, every nation, and virtually every city, town, and village on Earth has some form of electrical lighting. But the power demand for traditional incandescent lighting is high, and energy costs have steadily risen, prompting industry and governments alike to seek lower-power alternatives. Compact fluorescent bulbs were the first effort, but LEDs have proven themselves the logical successor.

But what Daniel Cooley, senior vice president and general manager for IoT products at Silicon Labs, pointed out to me in an interview, however, is that the growing success of LED lighting is setting the stage for connected lighting to follow closely on its heels. The key, he noted, is that with LEDs

manufacturers have already had to learn how to build electronic components into lightbulbs, and how to drive down the cost. "Once you have those," Cooley said, "it's easier to add more chips, and create a smart, cost-effective electronic product that also generates light."

The business model for adding IoT connectivity to lighting already has positive return on investment, Cooley added. The push of government-mandated energy reductions is one factor. It is easier, he noted to meet regulatory standards if you can control the light bulb itself. Shutting down lights when rooms (or even sidewalks) are empty or remotely via phone apps can result in significant energy savings all by itself.

Then there is the potential for cost savings in new construction. Connected lighting eliminates the need to wire light switches directly to fixtures. This not only reduces the amount of wiring needed by a substantial fraction, it simplifies building electrical design and simultaneously provides flexibility in the placement of fixtures and switches.

But cost is not the only potential benefit of connected lighting. A bulb vendor could incorporate things like Bluetooth beacons into light bulbs, creating a quick and easy way for retailers to set up location services simply by changing out the bulbs. The ability to set both color and intensity of connected lights allows both homeowners and retailers from auto dealers to restaurants to control the ambiance of their environments.

The market for connected lighting is potentially huge. According to Cooley, lighting is currently a $100 billion market annually, and some four billion lighting products are sold annually. That's a larger market than handsets.

There are still many market hurdles to overcome, of course. While traditionally the bulb, switch, and fixture manufacturers were separate businesses, they are becoming competitors in the connected light market, battling over who controls the light source. Chances are that consumers will still want things that at least look like standard switches rather than use their smartphones to control their house lights, for instance.

And there is still considerable fragmentation in the market regarding choices such as local wireless network technology. WiFi has its convenience but is power hungry, while approaches such as Zigbee require use of a gateway. The optimum answer is not yet apparent, although the appeal of gateways is growing (users don't want a dropped Internet connection to disable their lights) and could enable new after-market services to arise.

But a degree of resolution to the fragmentation is probably closer that people realize, according to Cooley. He estimates that in 12 to 18 months the field will narrow down to two or three choices from the half-dozen in the market now, setting the stage for multiple vendors to offer interoperable connected lighting products. The process is already underway, as the recent collaboration of Autani and LG Electronics to build a connected lighting ecosystem demonstrates.

Once the lighting industry starts selling cost-effective and broadly interoperable products, adoption will rise. And with rising demand comes rising production volume, which helps drive prices down and further build adoption. It's the classic signature of a killer app, because as the technology for connected lighting drops in cost and builds an installed base, other IoT apps will be able to ride its coattails without needing to have high-volume markets themselves.

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