LED WATCH

James Brodrick

A RETURN TO THE WILD WEST?

The collision of SSL and the IoT calls for collaboration inside and outside our market

The imminent intersection between solid-state lighting (SSL) and the fast-emerging Internet of Things (IoT) calls to mind SSL's early days, when an abundance of new possibilities, combined with a lack of standards and precedents, created something of an "anything goes" climate. These days, the advent of connected SSL is creating a similar situation.

A rapidly growing number of stakeholders in lighting and other industries are coming to realize the opportunity being created by the broad transition of lighting infrastructure to inherently controllable SSL systems. Specifically, networked lighting devices with sensors could become a key data-collection platform in buildings and in cities, and perhaps even form a backbone for the IoT—thereby enabling an unprecedented array of services, benefits and revenue streams that would take lighting well beyond its traditional definition and enhance its value immeasurably. But as attractive as that vision may be, we have quite a ways to go in order to make it a reality.

Until now, the use of lighting controls has been far from widespread, and those that have been installed haven't always saved as much energy as expected. One reason is their configuration complexity, which is exacerbated by a lack of standardization. Moreover, many contractors struggle to become sufficiently expert in a wide range of complex and varied systems and, thus, bid up their prices in order to cover themselves. And then there are the users, who struggle to maintain complex systems and use them to maximum advantage. The net effect of all this is that there remains an enormous amount of energy that could be saved just with the proper and persistent use of lighting controls—let alone what could be saved with broader

deployment. The advent of connected lighting systems with increasing degrees of automated configuration—facilitated by embedded sensors and intelligence as well as by other features and capabilities that leverage the data they collect—shows promise for significantly improving lighting-system performance and increasing its value. This could lead to much more widespread enablement of lighting-control strategies and deeper lighting-energy savings.

Another key issue for connected lighting is interoperability, which enables different devices, applications, networks and/or systems to work together and to exchange data with a common understanding. In order to have interoperability, industry needs to agree on common platforms and protocols that enable usable data to be transferred among lighting devices, other systems and the cloud. That's why a number of consortia have been working hard to do just that—among them the ZigBee Alliance, the AllSeen Alliance, oneM2M and the Open Interconnect Consortium, which recently coalesced into the Open Connectivity Foundation.

The players in these groups—which include such names as Cisco, Electrolux, Intel, GE Digital, Microsoft, Samsung and Qualcomm—give some idea of what's at stake. Reminiscent of how computing and IT technologies were developed, these groups are initially taking varying approaches or addressing different parts of the pie, and their efforts stand as a powerful example of how, when working toward a common goal, it's possible to simultaneously compete and collaborate.

The connected-lighting evolution has been picking up momentum lately, as evidenced by a spate of recent announcements from companies not traditionally associated with lighting. For example, Cisco just came out with a Digital Ceiling initiative that facilitates the IoT by linking building services over a single, converged Internet Protocol network.

The connected-lighting evolution has been picking up momentum lately, as evidenced by a spate of recent announcements from companies not traditionally associated with lighting

Such solutions promise to be well worth the effort, as attested to by the connected-lighting installations that have been cropping up across the U.S. and demonstrating a wide range of benefits, in addition to significant energy savings. Among those other benefits: providing occupancy data and path tracking that can lead to optimized inventory placement and space utilization, as well as to improved traffic flow; monitoring the energy consumption and utilization of lighting and non-lighting systems; and making for a much more satisfying user experience by providing light only where, when and how it's desired.

CALL THE IT DEPARTMENT

But in order for connected lighting to realize its full potential, there must be broad-based collaboration that extends beyond the lighting industry to include the IT folks as well. Collaboration needs to be facilitated in a variety of ways. For example, Denmark has launched three collaborative laboratories over the last few years (collectively called the DOLL program) dedicated to accelerating the development and deployment of outdoor connected lighting systems. The U.S. Department of Energy (DOE) initiated an effort with similar goals late last year by hosting an inaugural Connected Lighting Systems Meeting in Portland, OR, which brought lighting, computing and IT technology developers to the same table to discuss how they might better work together. A follow-up to that meeting—the 2016 Connected Lighting Systems Workshop—is being held this month in Santa Clara, CA, to dive even deeper into the challenges and complexities, challenge assumptions and competing ideas, and find potential paths forward. We'd like to see you there; you can register at *http://energy.gov/eere/ssl/connected-lighting-systems-workshop*. One thing's for sure: The connected-lighting train is moving mighty fast, so be sure to stay tuned.

James Brodrick is the lighting program manager for the U.S. Department of Energy, Building Technologies Office.