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# The Next Bright Idea: Software For Lighting


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Danny Yu: Bright idea.

This has been a busy year for the humble light bulb. Lighting efficiency is no longer just a topic of conversation for environmentalists – it has reached the halls of Congress and quarterly earnings calls on Wall Street. Perhaps never before have so many spent so much time and effort debating how we use artificial lighting, and the role of that lighting plays in our lives.

This is to all say that the $75 billion lighting industry is changing, and fast. It's often said among industry insiders that the current generation represents the biggest shift in the lighting industry since the time of Edison. Usually, this is said in reference to the rise of LEDs, of the technologies driving ever-more-efficient light. But perhaps the most exciting change rippling through the industry today isn't about LEDs at all – it's about software.

Software is altering the way lights are used every day, just as LEDs are changing the source of that light. In many ways, this added intelligence is the more revolutionary change. Software tools, in the form of centralized, Web-based management applications and platforms, are making buildings smarter and more energy-efficient by ensuring that lighting better matches the way we work today. The power of energy efficient lighting is not just in the emerging hardware, but in the software and networking that can maximize that hardware to deliver widespread economic benefit and truly change the way lighting is managed today.

Why does software matter for lighting? It's all about intelligence and control. *Intelligence* is the ability of artificial lighting to adapt to human needs and behavior – for example, changing the light level based on the time of day (and year), how long you've been in the room, the ambient light from outside, and the type of work in which you're currently engaged. *Control* is about handing the reins over to the building owner, facilities manager or energy professional. In other words, providing the software and cloud-based tools to centrally manage lighting just as an IT professional would manage a corporate network.

As an analogy, think about your mobile phone. The first few generations of cell phone enhancements were focused on hardware – making the phone smaller and easier to use, ultimately yielding hits for manufacturers like Motorola. In recent years, though, the industry has shifted with the smart phone – in essence, a software delivery device. Now, the value of your phone is just as tied to the operating platform and apps that reside on that phone as it is to the hardware of the device itself – and the way we interact with phones has fundamentally changed. This has created a new market for large existing vendors and emerging-growth providers of intelligent hardware, software applications and cloud services, while also generating billions in shareholder equity. The same is occurring in the lighting industry.

This change in lighting is being driven by customers' needs for ever-more-efficient buildings. Regulatory pressure is mounting for energy efficiency, from Federal standards as well as more stringent state standards such as California's Title 24. LEED and other green rating systems have proven their ability to raise building resale and rental values. As a builder owner, there's a dizzying array of products that can help improve

efficiency, but most are hardware-based and only provide a one-time upgrade. The promise of software is continuous improvement through analyzing the terabytes of data that will be generated by hundreds or thousands of lighting endpoints across an enterprise.

Buildings have never before been so data-rich. In lighting alone, it's now possible to know exactly how much energy is being used by each individual light fixture across an enterprise at every moment, how that compares with occupancy and external light levels, when and where wall switches are being used, and so on. The new problem is how to take advantage of that data. Smart software systems can analyze building information for trends and comparisons, and feed the results back into ever-improving energy reduction strategies. As the low-hanging fruit of energy efficient lighting gets picked, this kind of advanced analysis represents the higher branches.

This creates a tremendous opportunity for intelligent lighting, and you only need to glance up to understand why. Lights are all around us, and in huge numbers. Each one of those lights is individually consuming energy and impacting occupant comfort, and can be considered a "data point" for ongoing analysis and control. Although lighting doesn't use quite as much total energy in commercial buildings as HVAC (it's a close second, and is the top consumer of electricity), the sheer volume of points to be managed and data to be analyzedmakes it a thornier problem to solve.

With a few notable exceptions, traditional lighting manufacturers are not software experts. The solutions that are poised to succeed in this evolving lighting marketplacecome from best-of-breed technology – pairing winners in efficient light fixtures and components with innovators in intelligent energy management and control software. This approach allows every manufacturer to focus on their core advantages, and the customer is the winner.

The rise of lighting software may emanate from Silicon Valley, but software concepts are already making their way throughout the industry. At Philips' most recent Capital Markets Day, Marc de Jong, GM of Professional Luminaires, claimed, "We are only at the beginning of what intelligent lighting is going to mean for our customers." It's a compelling statement coming from the world's largest lighting company, and makes the case for a fast-changing market. As implausible as it may sound, software is helping a 130-year-old, $75 billion industry grow up.