Visible light illuminates a new approach for wireless comms

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With preparations well under way for a societal shift to solid-state lighting based on high-output LEDs, a proverbial light bulb has appeared above the heads of some forward-looking engineers. Their proposal: Why not switch the LEDs on and off so fast the eye cannot tell, in order to use them to transmit data too?

With enough advance work, every new LED light fixture could also be wired into the network backbone, accomplishing ubiquitous wireless communications to any device in a room without burdening the already crowded radio-frequency bands. Visible light communications (VLC) is being refined by industry, standards groups and well-funded government initiatives. And the stakes are enormous, since the traditional lighting market is measured in trillions of dollars and the transition to solid-state has already begun. This year, LED lighting will account for more than a \$1 billion market, with projected growth to about \$7.3 billion by 2014, according to Strategies Unlimited (Mountain View, Calif.).

Most of those apps will not attempt to replace other wireless technologies, such as Bluetooth, Wi-Fi, WiMax and LTE, but will aim for niches that are not well served by RF wireless todayfrom hospitals and aircraft, where RF can interfere with signals in life-critical equipment, to robots that could navigate halls for mail delivery using virtual signposts in overhead lighting, or signage that could supply additional information when a phone camera is pointed it.