Why Casambi won and what it means for lighting controls

What does Casambi's victory at the Lux Awards mean for lighting?

Casambi technology is currently being used in the Lululemon store in Harrods in London.

At this year's Lux Awards a little known company from Helsinki took away the coveted Controls Product of the Year Award. Given that lighting control is being feted as *the next big thing*, what happened there? With so many of the big beasts also in the field, what is it that gave Casambi the edge and what does it mean for the future of lighting control?

A little bit of history

For some of us, lighting control began with huge orange cabinets the size of Egyptian sarcophagi, sometimes containing as many as … ooh … 24 channels. Anyone remember the Electrosonic digiDim? In those days, dimming modules needed to be specified in advance, as modules were dedicated to only one type of light source. If you were dimming tungsten and fluorescent, that meant two different modules, and, just to re-iterate, the hardware was HUGE! So, the industry had a couple of immediate improvements to aim for.

This relatively low-hanging fruit was quickly harvested as electronics delivered on the issue of multi-source circuitry, and selectable dimming across a range of light sources became the norm. Physical size became more a case of finding space on a wall, rather than the dimmer cabinet actually being a wall. But then there was the programming. Oh dear, the programming.

In a way, that's been the story of over 30 years of lighting control development. Programming has remained an annoying inconvenience and the more sophisticated the system, the more annoying the programming routine. There is a good reason why so many systems have been installed and have never worked properly; they've never been programmed because it was either never part of the contract or no one knew what to do about it.

Conventional signalling between the control point on the wall and the luminaire has been dominated by just a few alphabet soup protocols; DALI, DMX and the rest of the boys in the band have run the game for many years. But every protocol requires a central control processor, whether it's a free-standing system or part of a building's computer network. Signal cabling snakes around the building from Central Command to the furthest outposts of the system's empire – and any addition to the system requires major works to incorporate it into the central mind.

But the arrival of the internet and the overwhelming success of the smart phone have brought a new generation of system designers along with them, and these guys see the world in a different way. Could it be this that has led to Casambi's success?

What clients want

In the shift from huge orange cabinet to discreet wall-mounted control system, one thing has never changed – what clients actually want from their lighting installations.

Apart from a few sad poseurs who only want the bragging rights that come with having branded lighting controls in their downstairs loo, the demand is pretty much as it always has been: an arrangement of lights that can be switched on, occasionally with varying outputs, maybe a bit of colour changing as and when required, and the ability to switch it all off. And that is all. Whatever the system is; whatever kind of operational protocol that's ticking away behind the scenes, that is what it comes down to.

It's a pity that conventional lighting control has never managed to deliver that level of simplicity with any real satisfaction. Control systems have been hamstrung by their own technology and the final success of a scheme has often come down to what can't be done, rather than discovering new ways of finding what might be possible. It's time for our heroes to step up to the crease.

What happens next?

While the traditional lighting control market has been searching for ways to incorporate old technology into the Internet of Things, linking DALI-based installations via Zigbee or bespoke wifi connections to a central administrative location, for example, a group of ex-Nokia designers started to explore a new communications method. As we are all aware, nearly every smart phone now comes with Bluetooth +4.0 within it and it is this technology that sits behind the Casambi offering.

We all think that we know Bluetooth. It's the way that we manage our hands-free phone calls (even though we often shouldn't) and we've probably got some sort of Bluetooth connection going on at home with our audio systems or whatever. But the original Bluetooth was notoriously energy-heavy and it ate batteries. It was Nokia that developed the current generation of Bluetooth +4.0 (I note that my Samsung Galaxy J5 uses Bluetooth 4.1, for example). To give it a more customer-friendly handle, this generation is known as Bluetooth Low Energy (BLE). Its old battery-chomping ways are a thing of the past and it has become an extremely developer-friendly tool for lots of wireless control applications.

So, for starters, Casambi has recognised that there is a low power way to distribute instructions around a building without relying on conventional router-based systems. But while we say farewell to the router, it's the next part of the story that whisks us away into the real sci-fi world that is 21st century electronica. Because there is no central command; no box hiding away in a riser cupboard or under the stairs. It's all happening – everywhere.

Many years ago now, my design studio decided to network its computers. It was all about file-management at the time, when storage issues dominated the micro-processor scene. But as time has gone on we've become used to the idea of the capacity of individual computers being harnessed to provide huge processing power across its network. It's this idea that makes Casambi unique in lighting control management.

The basic requirement still stands; a button to press when we want something to happen and a light fitting that understands that instruction. At one end there has to be an instructor (the transmitter) and at the other end we need the light/worker (the receiver). Then it all goes a bit peculiar, because what I've just described isn't really what's happening at all. Yes, there's a button to press and, yes, there's a group of light fittings doing what's required of them, but the entire system, every part of it, is the operating system. The computer is made up of every push-button control and every tiny receiver, and they all talk to one another. This is called a wireless mesh network. Imagine wearing a hairnet made up of tiny computers on your head . . . and see the future.

If we were talking about a global computer system that controlled the entire banking industry, we wouldn't be surprised, disappointed probably, but not surprised. The surprise here is the scale, not the idea of the thing.

But what about everyone else in the IoT?

The biggest fear that everyone is expressing is that of cyber security. We have already heard reports of building service's wifi systems being breached and, despite positive noises coming from the sector, the fear of systems being compromised remains. The BLE (bluetooth low energy) mesh network is not, in itself, connected to the internet; it's a closed system. Even if it could be breached, a hacker can only play with the lights.

To be fair, there is an internet connection because this is the kind of technology that needs occasional upgrading, much the same as every device we've ever used. The system can be connected via a smart phone but once the upgrade is complete, the system can be disconnected. The internet works at the behest of the system user; the user is not obliged to use the internet.

Is there another what happens next?

For Casambi and systems like it to work requires a take-up by luminaire manufacturers and suppliers to agree to make their fixtures BLE-ready, so that fixtures can be delivered to site all ready to go. That's a big call with the lighting control world in its current state of chaos, but the BLE tech offers a handy retro-fit option. Small BLE modules can be installed alongside the original fixtures, which means that the control of an entire lighting installation can be transformed into a BLE-enabled universe without affecting any of the actual hardware, so useful in buildings where the fabric cannot be disturbed or existing wiring cannot be accessed.

Does the future belong to Casambi and the BLE-enabled systems yet to come?

Watch this space.